The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXVI, No. 23 CHICAGO, ILLINOIS JUNE 3, 1916

THE NONSPECIFIC FACTORS IN THE TREATMENT OF DISEASE*

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As a natural consequence of the phenomenal advances of the past thirty or forty years in our understanding of disease processes and in what may be termed therapeusis by means of biologic products — advances largely the result of laboratory and more especially immunologic research — medical consciousness, if we may so regard the literature, has rather wholly centered about ideas of specificity, and, taking its cue from the laboratory, has regarded with considerable skepticism and frank disapproval any reference to observations, especially if clinical, at variance with the current trend of thought. And yet one finds a not inconsiderable accumulation of evidence, both from the laboratory and from the clinic, forming in a measure an undercurrent, definitely indicating a much larger share of certain nonspecific and as yet ill defined factors in recovery from disease. While the emphasis placed on certain phases of immunology and specificity, more especially the fruitful antigen-antibody conception of Ehrlich, has been of inestimable value, we rather believe that it has resulted in the neglect of certain perfectly obvious lines of approach to medical problems.

Quite early in the development of the tuberculin therapy it will be recalled that Matthes[1] demonstrated conclusively that to all intents and purposes the reaction considered specific for tuberculin could be produced when deutero-albumose was used, and showed that whatever difference occurred could be explained by the fact that the tuberculin fraction contained certain toxic peptones in addition. Matthes went even farther, expressing the idea that fever in general was produced by protein split products and suggested the importance of proteolytic ferments in this connection, thus foreshadowing the work of Vaughan in this country and the later German workers in anaphylaxis.

The history of the treatment of typhoid fever with vaccines is quite similar. Fraenkel many years ago demonstrated, in a convincing series of cases, the therapeutic value of typhoid vaccine used subcutaneously. Directly Rumpf followed him with a series of cases treated with a vaccine of *Bacillus pyocyaneus* with equally favorable results. But since the medical profession could see no merit in a nonspecific method, the entire subject was dropped for a considerable period of time. In this country, too, the controversy occasioned by the Schäfer vaccine is pertinent. Here was a biologic product, which, according to the observation of many competent observers, did at times produce striking results in a variety of infectious diseases; whether or not it was a safe remedial measure, and whatever may have been the defects, is not pertinent in this connection. The very fact that it did do certain things at times should have led to a study of why such favorable changes were brought about. The fact that it was palpably nonspecific, however, was sufficient to warrant the stamp of disapproval by the medical profession.

It is only within the last two years that a certain definite movement away from this rather narrow point of view has occurred, and it is significant to note that Wright,[2] than whom, of course, no one man has stood out more emphatically for specific therapy, recently made the following statement in this connection:

> All those who have had much experience with vaccines will have seen cases where therapeutic effects, lying quite outside the range of the particular vaccine employed, *and therefore, as we thought, not quite creditable to science,* have been obtained by vaccine therapy.

Schmidt[3] is among those who have called attention to the fact that following vaccine therapy of any kind the body becomes resistant to a variety of the commoner infections. So too, it seems that during carcinoma and pregnancy (both, by the way, conditions distinguished by their high antiferment titer) a relatively low "infection index," as Schmidt terms it, is established.

Von Wagner utilized a similar nonspecific method when he obtained favorable results in paretics treated with tuberculin; and only recently Blach[4] has reported a series of cases of early syphilis treated with tuberculin.

We cite these not to recommend the treatment, because it hardly seems warranted, possessing as we do much more efficient agents, but to indicate the same general phenomenon of a therapeutic effect from a nonspecific method.

It is in the domain of coagulation disturbances that therapy of this nature has received particular attention in the past. The beneficial effect of subcutaneous serum injections in hemophilia is well recognized, although here too the exact mechanism is unknown. Originally the slight leukocytosis was regarded as the potent factor, but for this there is no warrant. Results

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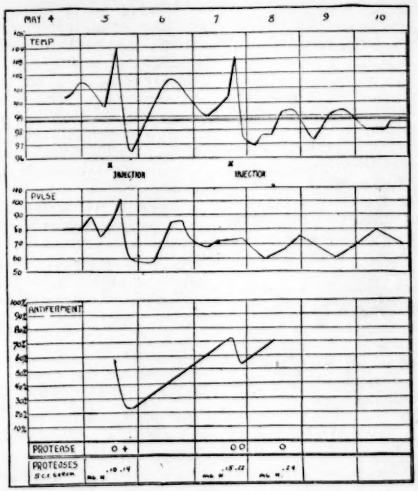
1. Matthes, M.: Deutsch. Arch. f. klin. Med., 1895, xlv.
2. Wright, A.: Brit. Med. Jour., 1915, ii, 629.
3. Schmidt, R.: Med. Klin., 1910, No. 43.
4. Blach, M.: Wien. klin. Wchnschr., 1915, No. 49.

have been obtained with homologous and heterologous serum, and with whole blood; but decisive results depend considerably on the dosage, and marked fluctuations in coagulation time frequently occur following such injections. That such injections do not alter the disease process through supplying directly some deficiency, but rather through stimulating the elaboration of some substance before lacking, would seem to be the conclusion reached by recent workers. This would agree with the stimulating effects observed from injecting serum and whole blood subcutaneously in tuberculosis and pernicious anemia (Esch, Busse, Weber).

The dermatologists have within the past two years had similar results in a variety of diseases, including some cases of psoriasis which had proved refractory to other methods of treatment. As a rule the homologous serum was injected intravenously in these cases.

The therapy of typhoid fever has so far been the chief avenue of approach to the problem. A number of vaccines have been elaborated and used subcutaneously during recent years for therapeutic purposes, and the results have been, in general, very encouraging. It was not, however, until such vaccines were used intravenously that the striking pictures of complete abortion of the disease were obtained. Then Kraus[5] observed that colon vaccines gave an identical result, while the typhoid vaccine was of marked benefit in certain cases of pelvic infection. Ichikawa[6] found that his paratyphoid patients recovered with a typhoid vaccine, while Lüdke[7] went a step farther, using a nonbacterial protein split product—a deuteroalbumose — with equally favorable results, in typhoid fever. The effect of such an injection of secondary proteoses in typhoid fever is shown in the accompanying chart.



Intravenous injection of secondary proteoses in typhoid fever: J. S. (City Hospital, courtesy of Dr. McCabe). Illness commenced April 29, one week before admission to hospital; Widal positive on admission; 1.5 c.c. proteoses injected intravenously May 5 (2 per cent. solution); 2 c.c. proteoses injected intravenously May 7 (4 per cent. solution). Protease became positive after first injection. Lipase titer increased from 0.6 c.c. hundredth normal sodium hydroxid, May 5, to 1.9 c.c. hundredth normal sodium hydroxid per cubic centimeter of serum, May 8. Proteoses in the serum increased from 0.1 mg. (nitrogen) per 5 c.c. serum to 0.24 mg., May 8.

Apart from the action of the vaccines, the protein split products, and the effect of both homologous and heterologous serums, observations are recorded of the effect of milk injected intramuscularly (Schmidt), salt solution (Mitlander), dextrose solution, colloidal metals, distilled water (animal experiments) and ferments (including the leukocytic extract of Hiss and Zinsser). It seems probable that the reaction and beneficial effects observed from these substances is based on a similar mechanism in all cases.

SELECTIVE STIMULATION

Latterly the hematopoietic organs have come to be recognized as the chief source of antibodies, a recent paper by Becht and Leuckhart[8] demonstrating in a convincing way that the circulating antibodies are not derived from the tissue cells in general, an origin that would presuppose the discharge of these substances into the general circulation by way of the lymph stream. As a corollary of this idea concerning the source of the antibodies, it would seem reasonable to suppose that any disturbance of the hematopoietic system might alter the antibody formation; an observation of Moreschi[9] quite bears this out. Moreschi noted the persistent absence of agglutinins in leukemic patients suffering from a superimposed typhoid infection.

In view of these facts, it would seem possible that the various agents act as stimulants of the hematopoietic tissue, which, as a consequence, suddenly floods the body with antibodies, thereby overcoming the infection. According to the idea of Wright, vaccine injections were supposed to be followed by a negative phase, at least as far as the opsonic power was concerned. Contrary to this generally accepted view, Bull[10] has recently shown that this does not hold true following the intravenous injection of a typhoid vaccine in immunized rabbits. Bull noticed that the antibodies were not diminished; on the contrary, they were rapidly increased following the injection. If this is the mechanism involved, it is important to keep in mind that the stimulus itself is not a specific factor, but that the hematopoietic system has been attuned to respond to a nonspecific stimulus with the production of specific substances. Dunklin, working in this laboratory, finds that a marked increase in antibodies follows the intravenous injection of proteoses in immunized rabbits. In a general way this mechanism of recovery would consist of a selective stimulation of the hematopoietic system by nonspecific substances.

THE LEUKOCYTOSIS

The importance of the leukocytic reaction has been emphasized by Gay and his associates. They believe that the recovery following such intravenous therapy (they worked with a modified typhoid vaccine) is due to a specific hyperleukocytosis. More recently, however, McWilliams[11] has observed that this hyperleukocytosis is apparently not specific to the degree indicated by the work of Gay and Claypole,[12] and that even nor-

5. Kraus, R.: Wien. klin. Wchnschr., 1915, p. 29.
6. Ichikawa, S.: Ztschr. f. Immunitätsforsch., Orig., 1914, xxiii, 32.
7. Lüdke, H.: München. med. Wchnschr., 1915, lxii, 321.
8. Becht, F. C., and Leuckhart, A. B.: Am. Jour. Physiol., 1916, xl, 366.
9. Moreschi, C.: Ztschr. f. Immunitätsforsch., Orig., 1914, xxi, 410.
10. Bull, C. G.: Jour. Exper. Med., 1916, xxiii, 449.
11. McWilliams, Helen: Jour. Immunol., 1916, i, 259.
12. Gay, F. P., and Claypole, E. J.: Specific Hyperleukocytosis, Arch. Int. Med., November, 1914, p. 662.

mal rabbits respond with a marked leukocytosis to the intravenous injection of typhoid vaccine. This coincides with our own experience. We must keep in mind, too, the fact that in typhoid fever particularly, the normal course of recovery is not marked by a leukocytosis; on this ground alone we might be justified in seeking the influence of some other factor or factors in the recovery following intravenous therapy.

THE HYPERPYREXIA

It is a common clinical experience that in some diseases, among them subacute joint diseases, neuralgia, diabetes, pernicious anemia, certain dermatoses, sarcoma, etc., distinct beneficial results follow at times on some intercurrent febrile condition. Is it possible, therefore, that these varied agents influence the course of the disease by producing a high temperature?

A long list of investigators, among them Walther, Hildebrand, Englehardt, Rolly and Meltzer, have reached the conclusion that a high temperature (from 40 to 42 C. or 104 to 107.6 F.), artificially produced, has a favorable influence on an established infection. Lower temperatures, on the other hand, as recently noted by Winslow and his associates,[13] would seem to retard the formation of immune bodies. Inasmuch as a very sharp febrile reaction almost invariably follows the intravenous injections, the importance of this phase of the subject cannot be overlooked. In our own cases we have at several times observed a reaction temperature of 107 F. within one-half hour following a proteose injection (in typhoid patients); unaccompanied by a change of the pulse rate of any moment or other untoward symptoms.

THE MOBILIZATION OF FERMENTS

We have already[14] pointed out that in experimental animals the intravenous injection of bacteria, kaolin, protein split products and trypsin is almost invariably followed by more or less marked mobilization of serum protease and usually of lipase (esterase).

In the patient a similar reaction occurs following the intravenous injection of vaccines and proteoses, but not to the same degree nor with the same regularity as in animals. In considering the possible effects of such a mobilization of ferments, both protease and lipase, we must keep in mind that a variety of reactions may occur. The serum protease, as other tryptic ferments, is without effect on bacteria; but if we consider the source of the intoxication occurring in the diseased organism as primarily due to protein split products, then such a mobilization of protease may be of considerable importance in the process of detoxication, in that the toxic fragments are hydrolized to lower and nontoxic forms. We have discussed this possibility in detail in its relation to pneumonia.[15]

As a result of this effect the diseased organism would rid itself for the time being of the toxic substances circulating at the time of the injection, although the disease process itself, and the infecting organisms, would possibly continue in existence capable of further injury. This would seem to be the explanation for the clinical picture obtained after intravenous therapy in such instances in which only an incomplete or transitory effect results. In all these cases the patients present a considerable improvement, both subjectively and objectively, on the day or days following the injection, despite the fact that the temperature may recur or even continue uninterruptedly.

The influence of the fat-splitting ferments mobilized is as yet obscure. In the ultimate analysis, of course, we must turn to ferments of this nature for the attack on the invading organism, because it is more than probable that the actual surface of the bacterium consists largely of lipoids, or intimate lipoprotein combinations, for the destruction of which fat-splitting ferments are essential. In certain infections with lipoid-rich organisms, such as tubercle and lepra bacilli, the clinical demonstration of the association of a high lipase titer in the serum, with a favorable prognosis, has been well established. At present, however, the subject is still one in which only diligent inquiry will furnish definite knowledge.

THE INCREASE IN ANTIFERMENT

When discussing the low "infection index" observed during the course of certain conditions, among them carcinoma, pregnancy and following vaccine therapy (Wright emphasized the latter finding particularly in his report on the antipneumococcus vaccination at the Premier Mine), we called attention to the fact that during such states a relatively high antiferment index is a well recognized accompaniment. The question arises whether this is a mere coincidence or whether there is some causal connection between the antiferment increase and the increased resistance to infection.

We have previously shown that the antiferment power of the serum depends on the amount of unsaturated lipoids present in a highly dispersed state in the serum.[16] Consequently, any factor that will tend to increase these lipoids, be it by increasing the supply or by decreasing the utilization (as when the lipase in the serum is decreased) by injuring tissue cells and causing them to discharge such lipoids to the blood stream, will increase the antiferment titer; while conversely, any influence decreasing these lipoids, their dispersion or their unsaturation, will tend to decrease the titer.

It is particularly the state of dispersion of these lipoids that is ignored by most investigators of their physiologic properties. Serum lipoids in coarse dispersion are inactive as antiferments as well as in the mechanism of coagulation, a fact that should be kept in mind when the effects of lipemia are considered.

Wright worked with saprophytic and serosaprophytic organisms, and noted that the addition of antiferment to the culture medium completely checked the growth of the serosaprophytic bacteria, and found that even the saprophytic bacteria grew less luxuriantly when no trypsin was added. In view of the results obtained by Rettger, Berman and Sturges,[17] showing that the ordinary infectious organisms are not able to derive their protein requirement from native or even partly hydrolized proteins, but probably solely from the lowest degradation products, the direct influence of the antiferment cannot be so simple as Wright would assume. The antiferment inhibits only the action of the tryptic and not the peptolytic and ereptic ferments. Of course, when we are dealing with a definite tryptogenic organism it becomes apparent that an increase in antiferment would offer an increased factor or resistance against its growth.

13. Winslow, C. A.; Miller, J. A., and Noble, W. C.: Proc. Soc. Exper. Biol. and Med., 1916, xiii, 93.
14. Jobling, J. W., and Petersen, William: Bacteriotherapy in Typhoid Fever, THE JOURNAL A. M. A., Aug. 7, 1915, p. 515.
15. Jobling, J. W.; Petersen, W., and Eggstein, A. A.: Jour. Exper. Med., 1915, xxii, 568.
16. Jobling, J. W., and Petersen, William: Jour. Exper. Med., 1914, xix, 459.
17. Rettger, L. F.; Berman, N., and Sturges, W. S.: Jour. Bacteriol., 1916, i, 15.

An increase in the serum lipoids affects bacterial growth, however, in another way, since an adsorption of lipoids occurs at the surface of the bacteria. The relation of this adsorption, seemingly a nonspecific and purely physical process, to the phenomenon of sensitization, is as yet not clear. It is reasonable to suppose, however, that the metabolic exchange of the bacterial limiting membrane is markedly influenced by increased lipoidal adsorption on the surface, resulting not only in influencing the metabolism unfavorably, but possibly preventing the excretions of substances protective for the bacterium (leukocidins, virulins, etc.).

The immediate effect of the vaccine and proteose injections is not an increase, but a distinct decrease in the antiferment titer for a short period of time, followed later by a rise. It is probable that the decrease is due to the chill which occurs after the injections, the increased metabolic demands of the organism being met in part by the rapid utilization of the serum lipoids.

CONCLUSION

It seems probable that the fundamental change on which the majority of the above described biologic reactions are based is one of colloidal dispersion, in that the injections bring about a less dispersed state affecting not only the serum proteins but also the serum lipoids. Such an alteration is sufficient to account for the fluctuations in the ferment-antiferment balance, and in the coagulation mechanism, as well as in the opsonic and complement powers of the serum, although it does not at present explain the increased antibody titer. With this as a basis we can understand that so many and diverse substances can bring about a reaction almost identical clinically and therapeutically. But here, as in so many other biologic problems which have to do with that most complex of tissues, the blood, it seems probable that no single factor can be identified as responsible for all the changes which occur, but that a whole train of events is inaugurated when the equilibrium of some of the delicate serum balances is disturbed, all of which tend toward a condition favorable for recovery from infection.

THE TREATMENT OF ARTHRITIS BY THE INTRAVENOUS INJECTION OF FOREIGN PROTEIN *

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During the past year attention has been called to the value of intravenous typhoid vaccine in the treatment of typhoid fever. The early reports by Penna, Kraus and Mazza of Buenos Ayres, and the independent investigation by Ichikawa, demonstrated clearly that by this method of treatment a certain percentage of typhoids might be brought to an immediate termination. Kraus and somewhat later Lüdke were able to show that similar results could be obtained with a vaccine made from colon bacilli, this showing definitely that the reaction was not due to a specific vaccine. Lüdke later was able to show that a solution of albumose would accomplish the same results.[1]

During the past summer we used the intravenous typhoid vaccine, 200,000,000, in the treatment of typhoid. Later, following the suggestion of Lüdke, we thought it might be of interest to compare these results with a series treated with albumose. We were unable to obtain any of Merck's albumose, but through the courtesy of Drs. Jobling and Petersen of Vanderbilt University we secured some proteose which they had prepared for their experimental work. By giving from 1 to 2 c.c. of a 4 per cent. solution of this proteose, we obtained the same results as with the typhoid vaccine, 20 per cent. of the treated cases terminating by crisis after a single injection. In addition, in about an equal number following the injection there was a termination by rapid lysis, and in a third group, which again equaled approximately 20 per cent., following a single injection, the continuous fever was changed to a very irregular type, which continued until the termination of the disease. The remaining cases, while reacting with a chill and rise in temperature, continued their febrile course in an uninterrupted manner. As stated, the proteose, in its chill, temperature reaction, leukocytosis and percentage of cases in which the course of the disease was modified, gave the same results as the typhoid vaccine.

These results are simply confirmatory of those already recorded, making it quite apparent that the sudden termination of the disease is not due to the specific character of the vaccine, but probably to the action of a foreign protein. It was decided to apply this method of treatment to another infection, and we selected for this purpose acute, subacute and chronic arthritis. In the selection of our material, the patient after entering the hospital was kept in bed for two or three days without special medication for observation as to how much improvement might follow simple rest. It was quite surprising to see how many patients with acute arthritis, after two or three days' rest in bed, were so much improved that we did not consider them suitable subjects for testing out the value of a therapeutic agent. Selecting, then, only those cases for study in which the disease was of a persistent type, we gave a 4 per cent. proteose solution, in doses of 2 c.c., intravenously. The patient reacted by a chill, rise in temperature and moderate leukocytosis. The day following the injection there was a moderate but definite improvement in the joint symptoms.

As our supply of proteose was limited, and as we believed that the reaction was due solely to the foreign protein, a typhoid vaccine was substituted for the proteose. This vaccine was prepared from the Rawling's strain, killed by heating to 55 C. and preserved by 0.5 per cent. phenol (carbolic acid). In the preliminary cases a dosage of 150,000,000 was given intravenously. The reaction was the same as when the vaccine was given to a typhoid patient except that the leukocytosis was much more marked, in two instances reaching 52,000. Immediately following the injection there was a moderate leukocytosis which increased slightly until the chill, which usually occurred in from five minutes to one hour. During, or immediately following the chill, there was a rapid drop in the leukocytic curve, resulting either in a normal count or a leukopenia, followed promptly by a rapidly developing leukocytosis which reached its maximum usually at the end of four and occasionally at the end of twelve hours, gradually returning to normal in from twenty-four to forty-eight hours.

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1. For complete references to the literature the reader is referred to the paper by Frederick Gay, Journal of Laboratory and Clinical Medicine, 1915, i, 13.

The degree of leukocytosis was dependent in a measure on the acuteness of the infection. Twice in acute arthritis the leukocyte count reached 52,000, while with the subacute forms it rarely passed 25,000. Following the chill there was a profuse sweat which continued for several hours, in three patients a second chill, with slight leukocytosis, from six to seven hours after the injection was recorded. When a patient received daily injections there was a gradual lessening in the duration of the chill, and finally the patient failed to react with a chill. As an illustration, following the first injection the chill lasted one hour, after the second thirty-five minutes, after the third fifteen minutes, and after the fifth injection rigors did not occur. The maximum temperature was reached, not at the time of the chill, but three to five hours after the injection. In several instances a leukocytosis occurred without chill, but in none of these was there improvement in the patient's condition. In acute arthritis a temperature of 105 was not unusual. Subacute arthritis gave a milder reaction. When the vaccine was repeated daily with each successive dose the degree of febrile reaction grew progressively less. To illustrate, in one case the temperature after the first injection reached 105, after the second 103.4 and after the third 102. Nausea and headache were noted practically constantly after early injections, the headache continuing at times for twenty-four hours. The pulse rate during the height of the fever never exceeded 120, and in no instance was there evidence of collapse or serious consequences.

Later the dosage was reduced to 75,000,000. With this amount the reactions were possibly slightly less violent, whereas with the proteose the results were definite but not striking; with the typhoid vaccine they were quite as remarkable, as is noted in typhoid patients treated in the same manner and according to our experience much more constant. In three of our ten cases of acute articular rheumatism, immediately following a single intravenous injection of 150,000,000, the fever terminated by crisis, the joint tenderness began to disappear, and within from twelve to twenty-four hours the joints were apparently normal. In these three cases the results were permanent. All of the seven remaining patients were very much benefited following a single injection, but the results were either not permanent, or soreness still remained in some of the affected joints. Three or four injections, however, sufficed to relieve all symptoms. Some of these patients after treatment remained in the hospital a week or more apparently well. After discharge, mild recurrences took place and the patient returned for further treatment. We wish to emphasize that in all this series, great relief followed one, or at most two treatments; relapses, however, were frequent. Five weeks have now elapsed since some of these patients were discharged, and no relapse has occurred. We are, therefore, justified in saying that recovery in some cases following even a single injection is permanent. We are now giving all our patients, even if the symptoms all disappear after a single injection, daily injections until four or five have been taken in order to see if relapses can be avoided.

Results quite as satisfactory were obtained in six cases of subacute arthritis of from three to nine months' duration. These patients all received several injections. Here, as in the acute cases, great relief followed a single injection, and after three or four injections had been given, the patient could move his joints with comfort, could dispense with his cane, and in every way the results were most gratifying. It is scarcely to be expected if these cases are due to a chronic focus of infection that the results will be permanent. We are keeping in touch with these patients, and up to the present time (four weeks) no evidence of marked recurrence has been noted. One patient with chronic arthritis of three years' duration received considerable relief after five injections.

Results even more striking were noted in cases of chronic gonorrheal arthritis of from two months' to three years' duration. One of these patients, who had a wrist involvement of three months' duration with complete disability, recovered apparently completely within forty-eight hours after a single injection, with free movement of the affected joint, and now after a lapse of four weeks there has not been any recurrence. The seven other patients in this series all received decided benefit following a single injection, and after repeated treatments (one having received thirteen) the results have been such as to encourage further use of the vaccine. None of these patients failed to receive decided benefit. On the other hand, two patients with acute gonorrheal arthritis were only moderately benefited.

The nature of the reaction effecting these changes, it is difficult to explain. That the same process is active here that is responsible for the termination by crisis in typhoid, following intravenous vaccine, is highly probable. That the reaction here and also in typhoid is a foreign protein, and not a specific protein, is probable. Vaughan has shown that animals immunized to *Bacillus prodigiosus* and *B. subtilis* also have a certain degree of immunity to typhoid and cholera. He was also able to obtain the same degree of transitory immunity to colon bacilli in animals, by the use of egg albumin, as he had been able to obtain with the products of the colon bacillus. In our cases of arthritis, while the joint manifestations might permanently disappear after one or more injections, in case the patient had an endocarditis or pericarditis this would run its usual course (and it was these patients who showed a marked tendency to relapse), or in case of gonorrheal arthritis following the injection the discharge would be temporarily increased rather than diminished. This localized immunization recalls to mind Faber's work on joint sensitization in arthritis, and suggests the question whether as a result of the vaccines it was possible the joints might become desensitized. That the febrile reaction following injection is not due solely to the foreign protein injected is suggested by the much milder reactions in patients with low degrees of infection. Jobling and Petersen suggest that for this reason part of the reaction is probably due to the foreign protein in the bodies of the destroyed bacteria exciting the infection, the destruction being due to mobilization of antibodies. While our results with proteose were slight, they were nevertheless definite. When the splitting of the protein can be properly adjusted, it is highly probable results similar to those following the typhoid vaccine may be obtained, with possible elimination of that portion of the reaction arising from the injected material.

Whether or not further experience will show that this method of treatment is of value as a therapeutic agent, it will at least give further evidence of the non-specificity of vaccines. It does not, however, involve the specificity of vaccines for preventive purposes.

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THE VALUE OF ANAPHYLAXIS IN THE TREATMENT OF GONORRHEAL COMPLICATIONS

ALLERGY, A THERAPEUTIC AGENT?*

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Serum therapy in infectious diseases has earned a justly prominent place. Passive immunization in diphtheria and tetanus is an established fact. Excellent results have been obtained with this form of immunization in epidemic meningitis, although the *Diplococcus intracellularis-meningitidis* elaborates no ectotoxin. Less certain immunization therapy, in the nature of bactericidal, bacteriolytic or agglutinative serums, has been accomplished in streptococcic bacteremia, Asiatic cholera, bacillary dysentery, pneumonia and other infectious diseases. In gonorrheal complications, such as rheumatism, beneficial results have been obtained with antigonococcic serum, and the assumption is that with the administration of the serum there has been the introduction of specific antibodies.

Serum therapy is not limited in its field of usefulness to specific immunity. Diphtheria antitoxin has been employed successfully by Noel Paton[1] in various septic conditions. He further found the same good results when employing normal horse serum in tuberculosis, arthritis deformans and cerebrospinal meningitis. Normal human serum has found a most favorable field in scarlet fever and even in systemic and nervous syphilis. Further, Herescu and Strominger,[2] in the exploitation of the meningococcus on grounds of morphologic relationship with the gonococcus, investigated antimeningococcus serum in its effect on gonorrheal complications, with the discovery that most excellent results were obtained in arthritis, ophthalmia, septicemia, ureteropyelitis and meningitis of gonorrheal origin. One must be struck by these bizarre findings, and the temptation presents itself to investigate the cause. While working with antigonococcic serum in the treatment of gonorrheal complications, my attention was attracted to the fact that the individuals who were markedly affected by anaphylaxis were the ones who responded to the treatment with the serum. Furthermore, the severer the manifestations, such as temperature, urticaria, joint pains, etc., the better the result. Again, no marked effect was noticeable until these anaphylactic manifestations appeared. Lastly, in the absence of the allergic symptoms no effect on the disease, subjectively or objectively, was obtained.

This seemed more than a coincidence, and in reverting back to my older records of all such cases, it was evident that the same conditions had obtained in the majority of the cases so treated. The following two cases typify what is meant:

Case 1.—E. B., a printer, aged 22, had had gonorrhea for nine weeks when he developed right-side epididymitis, with all the subjective and objective signs and symptoms typical of that complaint. The first, second and third glasses of urine were turbid. He was immediately given 15 c.c. antigonococcic serum intramuscularly, followed by 24 c.c. the next day. There was no change in his condition until six days after the last injection, when he developed a temperature of 101.6, had a generalized urticaria and felt very sick. He appeared for examination the second day of his illness with all the soreness in the scrotum gone, the swelling markedly reduced, and the second glass of the two-glass test perfectly clear. In two weeks he was completely cured with routine treatment.

Case 2.—G. A., had had gonorrhea for seven weeks, and presented the usual signs and symptoms of a posterior urethritis. He developed a left-side epididymitis three days after coming under my observation, and was immediately given 36 c.c. antigonococcic serum extending over a period of four days. Two days following the last injection, he was taken alarmingly ill with a temperature of 104, dyspnea, general malaise, joint aches, and a violent urticarial eruption. These symptoms subsided after the third day, when he reappeared for examination. I was astonished to find a complete recovery from the infection, including even the anterior urethritis, all facts having been verified by continued observation for a period of six months.

The following case is even more striking in that it gives unimpeachable evidence of the dependency of the beneficial results on the appearance of serum sickness.

Case 3.—A. R., a salesman, developed epididymitis twelve days after the inception of the urethritis. The day following the onset of the complication, he was given 24 c.c. antigonococcic serum, and 12 c.c. the next day. This was followed in a few hours by acute retention, due probably to swelling of the posterior urethra, necessitating catheterization. There was no temperature rise and no perceptible change in the symptoms of the epididymitis. After waiting in vain, the average incubation period, nine days, for the appearance of serum sickness, a third injection of 4 c.c. was given. He developed chills thereafter and a slight itching over the body. Forthwith the pain in the scrotum abated somewhat and the swelling subsided materially, but there was no change in the appearance of the urine. In five days he was again given an injection of 1½ c.c. serum. Within three hours he developed chills, a generalized urticaria, and joint pains. Following this there was a total relief of pain and tenderness in the scrotum, and in forty-eight hours after the last injection the scrotum returned to its normal size. Coincident with this improvement, the posterior urethritis disappeared and the second glass in the two-glass test cleared perfectly. In the space of three weeks there was complete recovery from the urethritis, with the employment of the usual forms of medication.

It is important to note that during the course of serum injections no local or other treatment was employed.

With the result of these representative cases in mind, it appeared that whatever effect was produced by the serum was not directly attributable to any true antitoxic or antibacterial elements embodied in the serum, because it in no way resembled the immediate action of diphtheria antitoxin or other antiserum. Was it possible that the beneficial results obtained were in reality due to anaphylaxis, or were they favorable phenomena that accompanied the unfavorable allergic symptoms? Could the rise in temperature exert a destructive effect on the gonococcus? It is believed that owing to the high point of temperature equilibrium in the pigeon, for example, a protective influence against infection exists. Again, the gonococcus can not withstand high temperature. These questions cannot at present be answered, but are still being investigated.

To prove that other factors than antibacterial of the specific serum played an important, if not the most important, part was easy. Normal horse serum was substituted for antigonococcic serum. The following records will show that there was no result obtained with the antigonococcic serum which was not equally well effected with normal horse serum. To place the

* Read before Douglas Park Branch Chicago Medical Society, Feb. 15, 1916.

1. Paton, Noel: Australasian Med. Gaz., 1910, xxix, 601.
2. Herescu and Strominger: Verhandl. d. deutsch. Gesellsch. f. Urol., 1913 and 1914, iv, 102.

experiment on the same basis throughout, all serums were obtained from the same firm.

CASE 4.—E. C., of the hospital service of Dr. Stillians, had developed signs and symptoms of acute epididymitis one month after the onset of the urethritis, and had had no treatment therefor. Nine days after the onset of the complication the symptoms were still acute. He was then given 10 c.c. normal horse serum. In twenty minutes he became markedly dyspneic, developed swelling of the eyelids, and was in great distress. The temperature and pulse were normal. These symptoms subsided within an hour. Two days later he developed an urticaria, with no temperature rise, and coincident with this all pain, tenderness and swelling of the scrotum disappeared. The posterior urethritis cleared completely. The patient then passed from observation.

This case was rather striking in the rapid onset of anaphylaxis after one injection of serum, with the rapid improvement in the patient's condition. Upon inquiry it was learned that he had never before received serums, but was a hostler by occupation, thus accounting for his idiosyncrasy to horse serum.

CASE 5.—S. D., had acute epididymitis on the left side, which had developed two months after the onset of the urethritis. Two days later he was given 5 c.c. normal horse serum, which in turn was followed by 8 and 9 c.c. on the two subsequent days. Two days after the last injection he developed a generalized urticaria and pruritus. There was no temperature rise or other ill effects. Upon this day the pain and swelling of the scrotum almost entirely disappeared, as did the posterior urethritis. While continuing treatment for the anterior urethritis, along with prostatic massage, he developed an epididymitis on the opposite side two weeks after the healing of the side first affected. This was preceded by the redevelopment of the posterior urethritis. With caution he was given 1 c.c. normal horse serum, and in the absence of any ill effects, this was followed by 2 c.c., and this in turn by 5 c.c. on three consecutive days. Slight erythema and pruritus developed after this course, with coincident subsidence of all scrotal disturbance, including a disappearance of the posterior urethritis. In two weeks complete recovery was secured.

If the serum really provoked or stimulated the formation of antibodies, the concentration of the latter was such as not to afford immunity or protection, after the first administration series, against the involvement of the opposite side, or perhaps the protection was too ephemeral.

CASE 6.—W. A. S. had gonorrhea of ten weeks' duration, in which time he developed two urethral fistulas and a paraphimosis, and then a right-side epididymitis. On the first day of the last complication he was given 10 c.c. normal horse serum, the second day 12 c.c. and the third day 10 c.c. There was no change in his condition until six days after the last injection, when he developed hypogastric colic and a slight eruption over the buttocks. When seen at this time, the posterior urethritis had resolved, and the scrotal condition had improved. In three days there was a slight relapse, with recurrence of the posterior urethritis and scrotal tenderness, but upon administration of 4 c.c. normal horse serum the condition again resolved within twenty-four hours. A second relapse occurred in three weeks, whereupon 4 c.c. horse serum were again administered, followed again in twenty-four hours by a clearing up of the posterior urethritis and epididymitis. At this stage the patient left town and passed from observation.

A review of this case brings to light the interesting data of repeated relapses and improvements, the latter following closely on the administration of small doses of serum. The allergic reaction was but slight after the first series, and also after the other injections, yet the change in the patient's condition was marked in each instance.

CASE 7.—J. B. had gonorrhea one month when he contracted right-side epididymitis. On the first day of the complication he was given 8 c.c., on the second, 7 c.c., and on the third day, 5 c.c. normal horse serum. Six days following the last injection he broke out into generalized urticaria, with temperature of 100.8, but coincident with that all tenderness in the scrotum disappeared. In five days, however, he developed gonorrheal rheumatism in the left knee, with a recurrence of the posterior urethritis, but no more serum was administered. Complete recovery was obtained, however, in a month.

In this case the effect of the serum, though temporary, nevertheless affirms the corelation of allergic symptoms and improvement.

CASE 8.—J. H. had posterior urethritis twenty days, when he developed right-side epididymitis. On the second day of the complication he was given 10 c.c. normal horse serum, and this dose was repeated on the two days following. Five days after the last injection an urticarial eruption appeared, and he had a temperature of 101.8. Twenty-four hours later all pain disappeared and the scrotal swelling receded markedly. The urine was almost cleared in both glasses, with the exception of threads in the first. Within three weeks, with ordinary treatment, including prostatic massage, the patient was discharged as cured.

The relation of serum sickness to improvement in this case is so apparent as to require no comment.

CASE 9.—H. F. developed a posterior urethritis three months after the appearance of the initial discharge. He was given 10 c.c. normal horse serum, followed the next day with 8 c.c. of the serum of the patient in Case 6, the latter's blood being withdrawn at the stage of recovery from the first relapse. Within eight hours of this dose the urgent symptoms of the posterior urethritis were ameliorated. Four days later 2 c.c. normal horse serum were given. This was followed in two days by a florid generalized urticarial eruption, with a temperature of 101.2. Coincident with this reaction, all signs and symptoms of posterior urethritis ceased. The second glass of urine completely cleared, while the first was but slightly turbid. Pus in the prostate was still abundant, however.

In this case the effect of the serum from a convalescent case was very noticeable within a few hours. That the influence was not more marked may be attributed to the fact that the donor was not putting up much resistance to the disease, as was evidenced by several relapses, and the protective substances provoked in his blood were insufficient in power or number or both. It must be noted, also, that the allergic reaction in this instance was slight. The change in the receptor's condition was nevertheless marked. The effect of the serum sickness in this patient is noteworthy, for the reason that even with the employment of antigonococcic serum, acute posterior urethritis is usually not benefited.

CASE 10.—W. H. Mc., a medical student, developed acute epididymitis one month after the onset of gonorrhea. He was then given 8 c.c. of normal horse serum. The next day he developed chills, headache, temperature of 102, and a florid generalized urticarial eruption. The day after the onset of these symptoms the urgency of urination began to subside, as did the pain in his scrotum. The temperature persisted for four days, but then the tenderness and swelling had completely disappeared; the second glass of urine was clear. The prostate showed very few pus cells.

This case resembled Case 4 somewhat, in that allergy was aroused by one injection of serum, although more delayed. It happens that this student

is a farmer during vacation. In that light his association with horses may explain his susceptibility to horse serum.

CASE 11.—Patient of Dr. M. S. Oliver developed acute posterior urethritis with edema and retention on the fifteenth day of his gonorrhea. On the eighteenth day he developed arthritis in the left tarsometatarsal joints and also in the left knee. On the twentieth day 10 c.c. normal horse serum were administered. On the twenty-first day a second injection of 10 c.c. was given, and on the twenty-second day a third 10 c.c. On the twenty-third day the right knee and ankle became involved. This patient had had similar complications with an attack of gonorrhea two years before, and antigonococcic serum injections had been of no avail. On the thirty-sixth day, in the absence of any serum reaction and any change in his condition, 3 c.c. serum were given. In six hours he developed a rash on his face and body, and there was increased pain in the affected joints, but no temperature rise. On the thirty-seventh day the joints felt better, but the urine was still cloudy in both glasses. On the thirty-eighth day 1 c.c. horse serum was given, and again a rash appeared with increased joint pain, but without temperature rise. The thirty-ninth day found the patient with joint pains alleviated and the second glass of urine perfectly clear. On the fortieth day 2 c.c. serum were injected, without provoking eruption or temperature, but causing joint pain, with extension to the finger and shoulder joints. The urine remained clear. Within a week all joint trouble disappeared, and the urine was still clear.

This case is of interest for two reasons: first, because of the prolonged period over which the serum was administered without any serious effects, and second, because of the favorable influence exerted by the serum the days following the injections after the slight allergic reactions.

A summary of these cases discloses the facts that normal horse serum can entirely replace the antigonococcic serum, the content of specific bactericidal properties of which is questionable. As a matter of fact, in view of recent work by Warden,[3] it appears doubtful that there are contained any antigonococcic properties in the serum, since in reality merely the metabolic products of the readily autolyzed gonococcus are injected into the horse in the preparation of the specific serum. To what factor we can attribute the beneficial results of normal horse serum, we cannot definitely state. That allergic phenomena play a rôle seems evident, since the best results were obtained at the time of the onset of serum sickness, and the greater the reaction the better the result. An attempt at explanation of this factor leads into the depths of the study of the nature of anaphylaxis. It is possible that certain elements in the serum itself exert a favorable influence. This has been found true, as before mentioned, in other infectious diseases, in which, too, the blood of convalescents has proved of great value. A suggestion of this influence was noticed in the patient of Case 9.

As investigation along this line is still being conducted, we can at this time offer nothing more than evidence sufficient to favor normal horse serum in place of antigonococcic serum, whose value as a specific is questionable. If allergy is in reality of therapeutic value, its employment is nevertheless hazardous. It is a question whether any gonorrheal complication requires the use of such heroic treatment. Safety cannot be sacrificed for speed.

25 East Washington Street.

3. Warden, C. C.: Vaccine Treatment of Gonorrhea, THE JOURNAL A. M. A., Dec. 11, 1915, p. 2080.

A STUDY ON FOOD

AND THE FUEL VALUE OF THE DIETARY AT THE NEW YORK CITY MUNICIPAL SANATORIUM

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The dietary question is fraught with many difficulties in an institution for the treatment of tuberculosis, and is a problem which is never entirely solved. Just when the responsible party is congratulating himself on a satisfactory, as well as an economical solution of the proposition, trouble appears from the most unexpected sources, varying from a bug in the cereal to a jump in the cost per capita. During recent years the consensus of opinion has changed from superalimentation in tuberculosis to the more rational procedure of feeding three generous meals a day, with extra diets only when indicated by poor appetite at the meal periods, accompanied by a markedly substandard or steady loss of weight. Some patients with poor appetites will eat as much as usual during meal periods, even if given extra between-meal diets, and when the nourishment is required and well borne, its administration is indicated. However, if the total caloric intake is not increased, the extra diets should be discontinued.

It has been pointed out by competent observers, notably by King and Bardswell and Chapman, that the strain of forced feeding on the organs of assimilation and elimination is so great that it becomes a source of danger rather than benefit in many cases, and its use should be the exception rather than the rule. While this is generally true, I have observed many patients who were capable of assimilating enormous quantities of nourishment without any apparent primary or secondary deleterious effects on their organisms. I believe, however, that conservatism should play a large part in the feeding of the tuberculous, and as the disease generally persists for a long period, the gastrointestinal tract and kidneys should be spared all extra strain, if they are to be expected to continue a successful struggle after the first acute onset of the disease has been overcome. The patient who emerges from the preliminary fighting with a damaged gastro-intestinal tract is in an unfortunate position, with poor prospects of becoming a comfort to himself or a permanently self-sustaining member of the community. His chances for an early exacerbation are excellent, and for final recovery, to say the least, are compromised. It seems only rational that the stomach should have a maximum amount of rest after a heavy meal, and for this reason alone the routine administration of milk and egg diets between meals would seem to be strongly contraindicated. In this connection, I should like to mention Dr. E. S. McSweeny's interesting studies at Otisville in 1908, for they are very convincing, and established the point just made as applied to patients in the Municipal Sanatorium. At that time reports from other institutions[1] indicated a number of objections to forced feeding, but it was felt that possibly some of these reasons did not neces-

1. Newton, R. C.: The Diet and Régime in Vogue in Thirty-Four Tuberculosis Sanatoria, Proc. Sixth Internat. Cong., Part 2.

sarily apply at Otisville, where all afebrile patients are compelled to do a certain amount of work.

McSweeny's experiment was as follows:

Two groups of patients were selected. Group 1 was allowed milk and eggs in addition to the three meals, while Group 2 received only three regular meals daily. It was found that the patients in Group 2 (those who ate only three regular meals) averaged larger weight increases than those in Group 1. It was decided to discontinue the milk and egg diets that had been administered as a routine morning and afternoon since the institution was opened, and to depend on the regular meals in all but exceptional cases. This policy was proved, by later experience, to be sound, and has been continued to date.

A study of the caloric content of our dietary was carried out at the Women's Unit in 1910, but the results were not published. The work was resumed two years ago and, owing to the paucity in the literature of studies in connection with the dietaries of tuberculosis institutions, it was decided to publish our results with the hope that such a step would promote discussion and criticism along this line. It was felt that so important a function as the dietary, which is one of the fundamentals of sanatorium treatment, deserves more comprehensive and collective study than it has received in the past, and that an exchange of ideas by the various workers in tuberculosis institutions is particularly desirable, for such an exchange will not only tend to lead to economy in administration, but will eventually provide a scientific basis on which to construct the future dietaries. Dettweiler said, "My kitchen is my pharmacy," and Osler[2] is quoted as follows: "As a healing of tuberculous process is largely dependent upon the state of nutrition, the question of diet becomes of the very first importance."

In spite of the fact that the dietary has been recognized for many years to be of prime importance, one finds but few studies, by men in this country, of a character that deserve more than passing attention. It seems deplorable that so little effort has been expended in this field during the past eight or ten years while the tremendous activities in connection with other phases of the tuberculosis problem have been in progress. Nothing tends to conserve the provision supply to such an extent as an active interest in the actual amount by weight of food consumption and food waste.

The aim of those in control of institutional dietaries should be: (1) to supply the food needs of the patients as economically as is consistent with the quantity, quality and service required for the treatment of the disease from which the patients suffer; (2) to avoid too frequent repetition of any particular foodstuff, and (3) to keep a close check on the amount of plate, general table, kitchen and ice box waste. When our dietary studies were resumed in 1914, we were guided by these principles.

The most costly item of the dietary is meat, and this was our first point of attack. It was found that egg breakfasts were entirely satisfactory to the patients; therefore eggs were served in various styles for from four to five of the morning meals each week. Steak and chop breakfasts were entirely eliminated, and other meat orders were gradually cut down to the minimum. The per capita per diem consumption of meats and fish fell from an average of 19.9 to 14.5 ounces during the course of six months. The eggs which are used for cooking purposes at the Municipal Sanatorium are of cold storage variety (fresh gathered extra), and are contracted for (1915) at from 25.5 to 26 cents per dozen. These are recandled after delivery to the institution. The substitutions above referred to and the routine serving of small initial meat orders, which cuts down the plate waste of those who have small appetites, but who, on general principles, take a large slice of meat when it is immediately available, accomplished the reduction in meat consumption and was mainly responsible for lowering our cost per capita for foods from 42 cents for the first nine months of 1913 to 37 + cents for the same period in 1914 (Table 1). Care was taken to keep the average number of calories up to a reasonable standard, and that this was satisfactorily accomplished is indicated by the fact that our patient weight reports continued to be entirely satisfactory.

TABLE 1.—SAVINGS FOLLOWING SUBSTITUTION OF EGGS FOR MEATS AT BREAKFASTS COVERING A PERIOD OF FOUR WEEKS

No. of Meals	Variety of Food	Per Meal	Total	Price, cts. (1914)	Cost
8	Steak	260 lbs.	2,080 lbs.	20 per lb.	$416.00
8	Chops, loin	145 lbs.	1,160 lbs.	19.3 per lb.	223.88
	Chops, rib	125 lbs.	1,000 lbs.	10 per lb.	100.00
Total for meat					$739.88
16	Eggs	80 doz.	1,280 doz.	23.6 per doz.	302.08
Total savings for period of four weeks					$437.80

We have felt for several years that it is not only entirely unnecessary, but also undesirable to serve meat and eggs at every meal; in fact, in 1910 meat and eggs were eliminated from the breakfasts at the women's unit for several weeks. During this time the weight increases and general physical condition of the patients were entirely satisfactory. In September, 1915, after an explanatory talk with the patients at the women's unit, it was decided to substitute 8 ounces of milk per capita for eggs on four mornings in the week, and this has not only proved to be a satisfactory change, but has, in addition, resulted in a weekly saving of 11.3 cents per patient per week.

TABLE 2.—COMPARATIVE FOOD VALUE AND COST OF MILK AND EGGS

		Protein	Fat	Carbohydrate	Total Calories	Cost per Capita per Diem
Eggs, 2 per portion	(Grams...	13.50	10.54	.....	...	(Eggs 26 cts. per dozen) 4.33 cts.
	(Calories..	55.31	105.46	.....	161	
Milk, ½ pt. per portion	(Grams...	7.48	9.08	11.34	...	(Milk at 6 cts. per qt.) 1.5 cts.
	(Calories..	30.66	84.44	46.49	162	

Saving per capita per diem, when milk is substituted, 2.83 cents.

Table 2 demonstrates that by substituting milk for eggs it is possible to save $16.41 a day in an institution of 580 beds (the capacity of the Municipal Sanatorium) without changing the caloric value of the dietary. If this substitution was made on four mornings each week, the annual saving would be approximately $3,500. Another factor of importance in connection with the substitution of milk is that good milk is easily procurable (at least in this vicinity) at 5.5 cents a quart at all seasons, while satisfactory eggs

2. Friedenwald and Ruhrah: Diet in Health and Disease.

are very often unobtainable, in sufficient quantities, at any price. A further result was an increased consumption of cereal, which we feel is particularly desirable and which has practically no effect on the cost per capita. The breakfast menu on the four days referred to consists of milk, 16 ounces; a good variety of hot cereal and rolls; butter; coffee, and occasionally fruit.

TABLE 3.—COMPARISON OF CARVING WASTE AT MALE AND FEMALE UNITS, NOV. 1 to 7, 1915

Variety	Male Unit		Female Unit	
	Amount Received from Storehouse, Pounds	Carving Waste, Pounds	Amount Received from Storehouse, Pounds	Carving Waste, Pounds
Roast beef	167	14	96¾	1½
Corned beef	203	44½	95	12½
Roast lamb	182	19	94½	5
Pot roast	164½	27	99½	2½
Boiled ham	138½	33½	63	13

A factor worthy of mention in connection with the utilization of our meats, which applies more especially to the women's unit, is the large children census. We have seventy-two children, between the ages of 5 and 14 years, and all of the meat which cannot be served to adults in the form of slices is cut up into small pieces and served to our juveniles. Table 3 represents the amount of carving waste which is eliminated by this procedure, and demonstrates to some extent the advantage, from the standpoint of economy, of treating small children in institutions with adults.

Much of the roast meat which is close to the bone and which is of fine quality is available for this use. The utilization of "left overs," which are bound to be ever with those who serve large numbers of persons, is a hard problem to handle in a state, county or municipal tuberculosis institution, where the stay is for a comparatively long period and where those who are catered to are posessed of their normal amount of gray matter, in addition to a highly specialized sense of their rights as citizens and former tax payers. Many economical and delectable dishes of high food value which are prepared from "left overs" and which are eaten with relish in most well to do households are scouted by a large majority of the patients. Those culinary connoisseurs have very definite ideas on the subject of dietetics, and as their forcefully expressed likes and dislikes are the governing factors in the formation of the institutional menu, it behooves the food purveyor to watch that infallible barometer, the garbage can, with ever increasing interest, and to catch the rumblings of any approaching storm from the distance. This precaution often saves the situation before any real serious developments occur, and, besides, keeps the responsible party in a continual state of preparedness. In our experience, hash has always been mistrusted in spite of the excellence of its ingredients, and it became necessary for us to discontinue it over two years ago, after our unsuccessful efforts to please with various "hashy" combinations had been paraded before the Board of Estimate through the agency of a former patient. The patients gave abundant evidences that they would not eat it, and although the "hash meal" was an economy, it was felt that it did little to further the results of treatment, so it was stricken from the menu. It is easy to carry economy too far in the planning of an institutional dietary. It is also necessary to bear in mind the fact that the physical well being of the patients is of first importance, and that no one thing tends to cause more dissatisfaction among the patients than an unsatisfactory menu.

The most reliable criterion for checking up the adequacy and esthetic qualities of the dietary is a computation of the actual food consumption and its value in calories, combined with a careful per capita study of the plate waste. If the number of calories is up to the standard, the food waste low and there has been a dearth of justifiable complaints, the person or persons responsible for the dietary can rest assured that all is well.

TABLE 4.—PER CAPITA CONSUMPTION OF FOODS AT BOTH UNITS AMONG THE VARIOUS CLASSES OF PATIENTS

	Adults				Children					
	Men	%	Women	%	Boys 9-15 Yrs.	%	Girls 5-9 Yrs.	%	Girls 10-14 Yrs.	%
Protein (grams)	127.2	..	107.4	..	105.5	..	84.9	..	91.9	....
Fat (grams)	154.5	..	121.8	..	129	..	99.3	..	102.3	....
Carbohydrates (grams)	425.7	..	288.9	..	413.88	..	254.4	..	267	....
Protein (calories)	521	14	440	16	432	13	348	15	376	15.5
Fat (calories)	1,436	39	1,132	41	1,196	36	923	40	951	39.5
Carbohydrates (calories)	1,745	47	1,184	43	1,696	51	1,043	45	1,094	45
Average calories per diem	3,700+	..	2,750+	..	3,300+	..	2,300+	..	2,400+	....
Average number calories per pound of body weight	27	..	23	..	43.5	..	33.8	..	34.5	....

Calories for male and female adults combined, 3,200.

Table 4 presents one of our dietary studies. In Table 5 are given King's and Bardswell and Chapman's diets. It will be seen that our protein content is considerably lower than Bardswell and Chapman's, and slightly lower than King's; the fats are lower than Bardswell and Chapman's, and higher than King's, and the corbohydrates about equal to King's, while much higher than Bardswell and Chapman's. Our dietary, however, is giving excellent satisfaction with a minimum of gastro-intestinal disturbances, and the comparative results tend to show that no trouble may be expected so long as the protein, fat and carbohydrate content of a dietary is kept within certain bounds.

TABLE 5.—KING'S AND BARDSWELL AND CHAPMAN'S DIETS

	King's Standard Diet Annex,* Grams	Bardswell and Chapman's Standard Diet,† Grams
Protein	131	144
Fats	113	160
Carbohydrates	385	270
Calories	3,166	3,186

* King: The Construction of an Economic and Efficient Diet in Tuberculosis. Tr. Nat. Assn. S. and P. Tuberc., 1909.
† Bardswell, N. D., and Chapman, J. E.: Diets in Tuberculosis. New York, Oxford University Press, 1908.

It has been stated that children require 80 calories per kilogram (36 calories per pound) of body weight, and adults, moderately active, from 35 to 40 calories per kilogram (16 to 18 + calories per pound) of body weight.[3]

Rubner's figures for a man of 65 kg. (140 pounds) are given in Table 6.

TABLE 6.—RUBNER'S FIGURES FOR A MAN OF 140 POUNDS

	Total Calories	Calories per Kg. of Body Weight	Calories per Lb. of Body Weight
During rest in bed	1,800	28	13
In repose	2,100	32	14½
Light work	2,300	33	15
Moderate work	2,600	40	18+
Hard work	3,100	48	22

Our average for men, 26 calories per pound of body weight, is well above the figures given for men at hard work, and the average for women about equal to it. The male children consume far above the average calories per pound as given by Pattee, and the female children slightly less than her figures. It would seem as if from 3,100 to 3,200 calories is about the normal average for the mixed sexes in tuberculosis institutions, as our food consumption was controlled entirely by the appetites of the various patients, and I presume that such was the case in the other institutions mentioned above.

If this premise is true, then the ability of the various patient groups to select the amount and variety of food necessary to yield what is considered to be the proper number of calories from entirely different dietaries is remarkable, and confirms the experiences of other observers in this field. In contrast to these figures, the reader may be interested to learn that Fisher gives 300 calories as a hypothetic figure for the amount of protein needed in the diet of the tuberculous or, as he states, 50 per cent. more than is required for a healthy man. In answers to a questionnaire which he sent to fourteen tuberculosis institutions in this country and abroad, it was found that the number of calories furnished by the various dietaries varied from 410 to 1,200 for protein, from 750 to 2,200 for fat, and from 560 to 2,100 for carbohydrates. In thirteen institutions the number of calories of protein exceeded 500, in thirteen the number of calories of carbohydrates exceeded 1,100, and in twelve the fats ranged from 1,100 calories up. The calories varied from 2,400 to 5,500 in all, ten institutions averaging 3,500 calories and up.[4]

CALORIES PER POUND OF BODY WEIGHT

As might be expected, the number of calories consumed per pound of body weight was found to be much greater in children than in adults, but we were surprised by the marked excess of calories consumed by the group of male children between the ages of 9 and 14 years over the female group of the same ages, which amounted to 10 calories per pound of body weight. The average gain in weight, however, was 1¼ pound for the female group and 73/100 for the male group. This may be accounted for by the greater activity of the boys, although one would think that the excess of calories consumed by them should be sufficient to neutralize the effect of this activity to some extent. A study of the weight records of the male and female units covering four years is of interest in connection with the foregoing. These units are separate institutions so far as the records are concerned, and our opportunity for watching the weight increments of the two sexes is peculiarly favorable. It will be seen that our records prove conclusively that the capacity for accumulating weight is markedly in favor of the females in spite of the monthly menstrual drain, and is enough to lead us to believe that it is a characteristic of the female sex. I believe it is the general opinion that males gain more on the average than females, and our studies have shown that the consumption of calories per pound of body weight by males is in excess of that of the female sex: 27 calories per pound for men and 24 for women. In spite of the greater tissue bulk in males with the capacity for greater food consumption, our results prove that females gain the most weight.

REPETITION OF FOODSTUFFS

Care in the avoidance of repetition has been the saving grace of many splendid culinary combinations. No matter how infatuated patients may be with a certain foodstuff, if it is served too frequently their ardor will soon wane, and a good thing is lost to the menu. Much of the monotony of the institutional dietary is due to repetition, and the fact that the menu is not so varied as to prevent patients from making a fair guess as to what they will receive at a certain meal on a certain day. With this in mind, about two years ago, we constructed a four weeks' menu which covered all of the foodstuffs available on our yearly contract. During the late spring, summer and early fall months, we have an abundance of green vegetables from our garden, and these are added to our menu as they are produced. We have from one to two vegetables besides potatoes for dinner and supper. For the first four weeks of operation the menu starts with the first week and ends with the fourth; for the second four weeks it commences with the second and ends with the first week; for the third four weeks, it begins with the third week and ends with the second, etc. This arrangement makes it practically impossible for any patient to surmise what food is to be served at any time. Moreover, the plan facilitates the ordering of supplies, and enables one to work out a daily ration with very little difficulty.

TABLE 7.—WEIGHT

	Average Increase of Those Gaining, Pounds	Gained		Lost	
		Number	Per Cent.	Number	Per Cent.
1912: Male unit	7.15	419	80.11	104	19.89
Female unit	12.23	276	91.39	26	8.61
1913: Male unit (adults)	9.84	357	83.02	73	16.98
Male unit (children)	5.21	48	97.96	1	2.04
Female unit (adults)	13.48	228	87.36	33	12.64
Female unit (children)	10.03	106	96.36	4	3.64
1914: Male unit (adults)	9.46	305	78.41	84	21.59
Male unit (children)	7.20	39	97.50	1	2.50
Female unit (adults)	10.71	200	83.68	39	16.32
Female unit (children)	10.25	104	96.30	4	3.70
1915: Male unit (adults)	10.62	350	85.37	60	14.63
Male unit (children)	9.48	36	97.30	1	2.70
Female unit (adults)	11.69	222	85.29	40	14.70
Female unit (children)	11.49	70	97.22	2	2.78

Our experience has taught us that it is good judgment to stop for a while, at least, any particular combination that the patients begin to tire of. A good illustration of the evil of repetition is our experience with codfish balls at the men's unit several years ago, where

3. Pattee, Alida Frances: Practical Dietetics with Reference to Diet in Disease, Mount Vernon, N. Y., A. F. Pattee, 1910.
4. Fisher, Irving: Proc. Sixth Internat. Cong. Tuberc., i, Part 2.

it had been customary to serve them about four times each month. It is a cheap meal, and was appreciated by the patients for a time; but they finally developed a marked aversion to salt cod, and on one occasion a few outraged "citizens" waylaid a whole meal of carefully prepared uncooked codfish balls and threw them into the refuse pail. The miscreants were apprehended and punished, but nevertheless the hint was taken and salt codfish did not appear on our menu again for a considerable period. It is now alternated with other salt fish and is appreciated.

PLATE WASTE

The work reported by Wright on plate waste is of value to those employed in insane hospitals, but of practically no use to workers in tuberculosis institutions. It is to be expected that the per capita waste will be greater in a tuberculosis institution than in an institution for the care of insane or in an acute hospital, owing to the fact that much larger quantities of food, a great deal of which is especially rich in wastage, is served to the tuberculous. Meats furnish an especially large amount of waste, owing to the comparatively large percentage of uneatable portions, such as gristle, fibers, small bones, etc., and this food forms a conspicuous part of the dietary of the sanatorium. We have no means of checking up our waste with that of other institutions for the treatment of tuberculosis, as our review of the literature has failed to reveal any studies on this problem. We feel that periodic studies of the per capita food wastage will do much to stimulate those in charge of the dietary to further efforts toward economy, and are sure that the result of food waste studies by the various large sanatoriums would be of great service to all. Our dietitians are instructed to serve as much of any particular food as a patient desires to eat; but to reduce useless waste to a minimum by serving it in small portions. This rule has proved to be satisfactory to the patients, and is bound to effect economy of foodstuffs.

TABLE 8.—AVERAGE PERCENTAGE OF MEAT CONSUMPTION AND SHRINKAGE

Meat	Consumption, Per Cent.	Shrinkage and Wastage, Per Cent.
Roast beef	36 to 39	64 to 61
Pot roast	28+	71+
Beef steak, sirloin	25.5	74.5
Roast lamb	29.5	70.5
Lamb chops	31	69
Liver	44.5	55.5
Roast chicken	26	74
Bacon, fried	30.5	69.5
Salt pork	54	46

Our average per capita per diem waste of solid foods is for male adults, $4\frac{5}{100}$ pound; for boys from 9 to 15, $2\frac{7}{100}$ pound; for females, entire dining hall, $4\frac{1}{100}$ pound, and for female children, $3\frac{35}{1000}$ pound. It is noticeable from this that children "clean their plates" much better than adults, although the smaller amounts served accounts for a part of this.

In connection with our plate waste studies we carried on investigations covering the shrinkage in meats, which were followed up from the time the meat was cut from the side of the carcass until the remnants were accounted for as plate waste.

The following headings used in our tables illustrate the method of procedure:

Date.
Varieties of meat.
Amount received from storehouse, including butchering waste, pounds.
Kitchen trimmings, pounds.
Weight before cooking, pounds.
Shrinkage, pounds.
Plate waste, pounds.
Surplus, pounds.
Amount consumed, pounds.
Percentage of consumption.

We found that the percentages given in Table 8 represented the average percentage of meat consumption and shrinkage (including wastage). These percentages of consumption seem to be absurdly low; but when we consider the butchering waste, the large amounts of water and fat which are eliminated by the cooking, and the weight of the bones, fiber and gristle, which appears as plate waste, the figures assume more reasonable proportions.

TABLE 9.—FORM OF TABLE FOR COMPUTATION OF DAILY CALORIES AND FOOD WASTE*

Date										
Menu for Day	Pounds Eaten	Chemical Composition			Number of Pounds Eaten			Plate Waste	Space Used for Computing Number of Calories
		% P	% F	% C	P	F	C		
Column for various foods		Percentage not totaled			These four columns are totaled				
Total No. of pounds									

* Abbreviations: P, protein; F, fat; C, carbohydrate.
Method of procedure for computing number of calories in dietary:
Number of pounds of protein plus number of pounds of carbohydrate × 1,820 (number of calories in 1 pound of protein or carbohydrate) = total number of calories of protein and carbohydrate.
Number of pounds of fat × 4,080 (number of calories in 1 pound of fat) = total number of calories of fat.
Total number of calories of protein and carbohydrate plus total number of calories of fat = total calories consumed for day.
Total calories consumed for day ÷ number of persons served = average calories per patient per day.
Total pounds of plate waste ÷ number of persons served = average per capita plate waste per day.

ROUTINE FOR DETERMINING THE CALORIC VALUE OF FOOD

Our routine for determining the caloric value of the food served, which is similar to that in general use, except that we do not use the metric system, follows:

The various classes of foods are weighed separately before service. After the meal is finished all of the foods which are suitable for future use (such as meats on the platters, etc.), are weighed separately and the weights deducted from the original amounts. The foods which are left as "plate waste" are now separated out and placed in marked containers (one for each article), which are weighed individually. The original amount served minus the "left overs" minus the "plate waste" equals the actual amount of food consumed. It is, of course, necessary to determine the percentage of protein, fat and carbohydrate in each combination of foodstuffs served, and this is very easily accomplished as tables are available which cover almost every possible ingredient. The amount of protein, fat and carbohydrate is determined by multiplying the number of pounds of each foodstuff on the daily menu by its percentage of protein, fat and carbohydrate, and totaling the three separately. The total

number of calories for the day is obtained by multiplying the number of pounds of protein and carbohydrate consumed by 1,820, as both of these have the same caloric value, and the number of pounds of fat by 4,080. The results are then added and the sum represents the number of calories consumed. The total number of calories, divided by the number of persons served for the day, gives the average number of calories consumed per person. Table 9 is used at Otisville for the computation of the daily calories and food waste. The calories are figured out for each meal and then totaled.

CONCLUSIONS

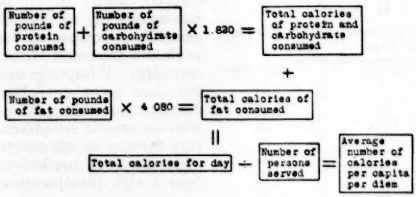
1. In all institutions for the care of the tuberculous, food studies, including the caloric content of the dietary and food waste, should be carried on at regular intervals, preferably for one week or more during the various seasons of the year, and these records should be made available for comparative purposes.

2. Special training, though advisable, is not a necessary requisite for the carrying out of a successful dietary study in an institution. It is, of course, essential that the doctor who directs the work should be thoroughly familiar with the problem. It is only necessary that the person or persons who are doing the work should be intelligent, careful and willing to follow conscientiously the "rules of the game."

3. The elimination of meats and eggs from the morning meal and the substitution of milk is a sound and justifiable economy.

4. The dietary of the tuberculous should be high in caloric value, but confined to three daily meals in all but exceptional cases.

5. Males consume more food than females, both in total amount and in number of calories per pound of body weight, but in spite of this fact, females make much larger gains than males, enough so as to indicate that rapid accumulation of weight is a characteristic of the female sex.



Diagrammatic scheme for computing the caloric content of a dietary. Pounds are converted into grams by multiplying by 453.5925.

6. The avoidance of frequent repetition of foodstuffs is very important.

7. A four weeks' menu, when used as suggested, is of great aid to those controlling the dietary, and tends to do away with repetition.

8. The treatment of small children, in separate units, in institutions with adults, is both feasible and advantageous in that it results in economy of foodstuffs.

9. Small initial servings with as many "seconds" as may be desired is satisfactory to the patients and prevents much plate waste.

10. The plate waste in institutions for the tuberculous is of necessity higher than in hospitals for the insane or in general hospitals.

Much credit is due to Miss Marguerite Brady, who has been in charge of the dietary work at the male unit since the work was started, and to Miss Carlotta Nellis, Miss Beatrice Cummings and Mrs. Catherine Stoltzenberg, who served in turn as dietitians at the female unit. We wish to express our thanks to Dr. Herbert M. King for his assistance, to Graham Lusk for reviewing the results of our work, and to Miss Charlotte Strickland of Loomis Sanatorium for many useful suggestions.

Necessity of Cultivation.—Cultivation is as necessary to the mind as food to the body.—Cicero.

VARIATIONS IN RENAL FUNCTION DEPENDENT ON SURGICAL PROCEDURES *

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This report is based on the investigation of changes in renal function produced by operations performed under general anesthesia, and of the variations in renal activity dependent on relief from back-pressure of urine. For this work, the rate of excretion of phenolsulphonephthalein and the concentration of urea in the blood have been taken as the indexes of renal activity. These tests were chosen because of their recognized value and because they are so easily performed. The phenolsulphonephthalein test was carried out by the technic of Rowntree and Geraghty.[1] The determination of the urea concentration in the blood was made by the urease method introduced by Marshall.[2] The concentration of total nonprotein nitrogen in the blood is probably a better index of renal efficiency, but the urea determination is made with less difficulty and can easily be made a routine clinical procedure. It is true that the proportion of urea nitrogen in the total nonprotein nitrogen varies considerably, but usually it forms from 50 to 70 per cent. of the nonprotein nitrogen, the percentages increasing with the total nitrogen retention. This has been shown by Folin and Denis,[3] Foster,[4] Christian, Frothingham, O'Hare and Woods[5] and others. In infants the urea nitrogen percentage is appreciably lower as a rule, according to the results obtained by Schlutz and Pettibone.[6] But on the whole the concentration of the urea in the blood may be taken as a fair index of renal function.

Although the question as to the agreement of phenolsulphonephthalein and blood urea tests is beyond the scope of this paper, still Table 1, giving the results of these two tests performed simultaneously on the same patient, is of considerable interest.

Throughout these tables blood urea concentration is reported in milligrams of urea per hundred c.c. of blood. Of the phenolsulphonephthalein figures, the first represents the time in minutes elapsing between the injection of the substance intramuscularly and its appearance in the urine; the second figure is the percentage excretion in the first hour after appearance in the urine, and the third figure is the percentage excretion in the second hour. For the arbitrary grouping, a phenolsulphonephthalein excretion of less than 50 per cent. in two hours is considered "diminished,"

* From the Brady Urological Institute of the Johns Hopkins Hospital, and the University Hospital, Minneapolis.

1. Rowntree, L. G., and Geraghty, J. T.: The Phthalein Test, Arch. Int. Med., March, 1909, p. 284.
2. Marshall: Jour. Biol. Chem., 1913, xv, 487.
3. Folin and Denis: Jour. Biol. Chem., 1913, xiv, 29.
4. Foster, N. B.: Uremia, Arch. Int. Med., March, 1915, p. 356.
5. Christian, Frothingham, O'Hare and Woods: Am. Jour. Med. Sc., 1915, cl, 655.
6. Schlutz, F. W., and Pettibone, C. J. V.: Quantitative Determinations of Nonprotein Nitrogen in the Blood of the New-Born, Am. Jour. Dis. Child., September, 1915, p. 206.

and a blood urea of fifty or over is considered "increased."

In the consideration of the foregoing results, it is to be noted that the patients on whom these tests were made were persons suffering from some surgical disease of the urinary tract, that their average age was about 55, and that all grades of arteriosclerosis are represented. With the exception of the patient in Case 29, no other showed any signs of cardiac decompensation or edema. With the exception that a considerable number of patients who had high phenolsulphonephthalein excretions did not have a blood urea test made and so are not reported here, there was no selection of cases for Table 1.

TABLE 1.—RESULTS OF PHENOLSULPHONEPHTHALEIN AND BLOOD UREA TESTS

GROUP I, WITH APPROXIMATELY NORMAL PHENOLSULPHONEPHTHALEIN EXCRETION AND BLOOD UREA CONCENTRATION

Case No.	Phenolsulphonephthalein Time	1st Hour	2d Hour	Blood Urea
1	10	58	14	28
2	10	42	15	34
3	10	43	19	43
4	10	45	10	36
5	8	52	17	30
6	10	40	20	42
7	10	52	10	34
8	10	45	15	36
9	11	40	22	56
10	9	28	28	44
11	9	40	18	31

GROUP II, WITH DIMINISHED PHENOLSULPHONEPHTHALEIN EXCRETION, BUT WITH APPROXIMATELY NORMAL BLOOD UREA

Case No.	Phenolsulphonephthalein Time	1st Hour	2d Hour	Blood Urea
12	13	25	21	39
13	34	16	11	53
14	20	17	7	53
15	17	19	17	42
16	10	18	24	32

GROUP III, WITH DIMINISHED PHENOLSULPHONEPHTHALEIN EXCRETION AND INCREASED BLOOD UREA

Case No.	Phenolsulphonephthalein Time	1st Hour	2d Hour	Blood Urea
17	21	7	12	94
18	18	12	10	105
19	33	8	9	91
20	18	12	11	83
21	25	Trace	Trace	205
22	20	5	6	164
23	..	Trace	Trace	430
24	..	Trace	Trace	290
25	32	9	10	90
26	15	8	10	89
27	8	25	18	80
28	11	21	14	62
29	18	6	9	84
30	32	9	10	90

In looking over the results obtained in this series of cases, one will notice that a high phenolsulphonephthalein excretion was always associated with a normal or only slightly increased blood urea concentration, and that a low phenolsulphonephthalein excretion was usually associated with a very definite increase in blood urea concentration, although in a small number of cases the blood urea was not much increased, if at all (Group II).

The foregoing conclusions in the main are in agreement with those of most investigators; however, it is known that discrepancies are encountered somewhat more frequently when the tests are performed on patients suffering from the various forms of nephritis complicated by cardiac decompensation, with chronic passive congestion and edema. For further comparison of these tests see the work of Frothingham and Smillie,[7] Rowntree, Marshall and Baetjer,[8] and of Hopkins and Jonas.[9] It is interesting to note that the four cases of superpermeability reported by Baetjer[10] showed normal or only moderately increased nonprotein nitrogen with the hypersecretion of phenolsulphonephthalein.

7. Frothingham, Channing and Smillie, W. G.: The Relation Between the Phenolsulphonephthalein Excretion in the Urine and the Non-Protein Nitrogen Content of the Blood in Human Cases, Arch. Int. Med., October, 1914, p. 541.

8. Rowntree, L. G.: Marshall, E. K., Jr., and Baetjer, W. A.: Further Studies of Renal Function in Renal, Cardiorenal and Cardiac Diseases, Arch. Int. Med., April, 1915, p. 543.

FUNCTIONAL CHANGES FOLLOWING RELIEF FROM BACK-PRESSURE OF URINE

It is well known that an increased phenolsulphonephthalein excretion and a decreased nonprotein nitrogen retention are usually associated with improvement in renal function. But nowhere is this change so well shown as in persons relieved of some form of urinary obstruction. In Table 2 is shown the result of preliminary treatment of patients with urinary obstruction due to prostatic hypertrophy. The treatment consisted in bladder drainage by means of an inlying catheter. Most of the patients were able to be up in chairs or walking about during the period of this treatment. In most cases there was very little or no change in the physical signs.

In Table 2 the determinations on each patient were made at intervals of from four to seven days, the corresponding phenolsulphonephthalein and blood urea tests being made approximately simultaneously. Similar tests, made on quite a number of other patients who did not have so high an initial nitrogen retention, showed exactly similar but less marked changes. It is also worthy of note that a fall in blood pressure generally accompanied the improvement in condition; in Case 1 the blood pressure dropped from 210 to 155 mm. Hg. Excepting in Case 4, the patients whose tests are given in Table 2 were all operated on, a prostatectomy being done, and all recovered normally with no uremic symptoms. In Case 4 the patient was very drowsy on admission; his mental condition, however, improved markedly, but he was considered too poor a risk for operation.

TABLE 2.—RESULT OF PRELIMINARY TREATMENT OF PATIENTS WITH URINARY OBSTRUCTION DUE TO PROSTATIC HYPERTROPHY

	Phenolsulphonephthalein Time	1st Hour	2d Hour	Blood Urea
Case 1	21	7	12	94
	15	19	10	72
	12	23	15	64
	13	23	12	47
Case 2	18	12	10	105
	20	14	11	80
	19	18	15	64
	15	24	11	55
Case 3	33	8	19	91
	18	26	25	53
Case 4	25	Trace	Trace	205
	20	Trace	Trace	200
	25	Trace	Trace	158
Case 5	32	9	10	90
	34	16	11	53
	20	17	7	53

During this preliminary treatment the patients received the routine hospital diet, which contains the normal amount of nitrogenous food. Folin, Denis and Seymour,[11] Frothingham and Smillie[12] and others,

9. Hopkins, A. H., and Jonas, Leon: Studies in Renal Function with Special Reference to Non-Protein Nitrogen and Sugar Concentration in the Blood, Phenolsulphonephthalein Elimination and Blood Pressure, Arch. Int. Med., June, 1915, p. 964.

10. Baetjer, W. A.: Superpermeability in Nephritis, Arch. Int. Med., June, 1913, p. 593.

11. Folin, Otto; Denis, W., and Seymour, M.: The Non-Protein Nitrogenous Constituents of the Blood in Chronic Vascular Nephritis (Arteriosclerosis) as Influenced by the Level of Protein Metabolism, Arch. Int. Med., February, 1914, p. 224.

12. Frothingham, Channing, Jr., and Smillie, W. G.: A Study of Different Nitrogenous Diets in Chronic Nephritis, Arch. Int. Med., February, 1915, p. 204.

have shown that marked changes in the nonprotein nitrogen of the blood may be produced by variations in the nitrogenous intake. But the changes recorded occurred while the patients were on the same diet. The great importance of these tests in the selection of the most opportune time for operation is obvious, for often there is very little or no change in the appearance of the patient or in the physical examination or urine analysis.

EFFECT OF ANESTHETIC AND OPERATION ON BLOOD UREA

1. Nitrous Oxid-Oxygen-Ether Anesthesia, with Rebreathing: Very little ether was used, occasionally none at all, and never so much but that the patients were conscious in five or ten minutes after operation. The blood urea determinations were made twenty-four hours or less before operation, and again from twenty-four to forty-eight hours afterward, and on some of the patients subsequent determinations were made at three and five day intervals. The results are shown in Table 3.

TABLE 3.—BLOOD UREA FINDINGS WITH NITROUS OXID-OXYGEN-ETHER ANESTHESIA, WITH REBREATHING

Case No.	Operation	Blood Urea Before	Blood Urea Afterward	Subsequent Determinations
1	Excision of sinus tract to kidney	28	38	
2	Nephrectomy	34	44	
3	Nephrectomy	43	68	
4	Pyelotomy	36	70	
5	Prostatectomy	30	59	
6	Prostatectomy	64	87	
7	Prostatectomy	47	57	
8	Prostatectomy	53	48	
9	Nephrectomy	79	..	192,202,159,104,53
10	Nephrectomy	63	..	130,170,104,79
11	Vesical lithotomy	181	227	262,300,413
12	Prostatectomy	47	..	198,103,67
13	Prostatectomy	49	76	

In Table 3 it will be noticed that all patients except one showed a more or less marked rise in blood urea immediately following the operation, the average being 21 mg. per hundred c.c. This increase must be considered all the more real when it is remembered that immediately after operation each patient receives from 1,000 to 1,500 c.c. normal salt solution infusion, and that they are all on a very low protein diet for at least forty-eight hours after operation. The average age of these patients was about 50. The kidneys which were removed had all been shown previously by separate phenolsulphonephthalein tests to have markedly diminished function. For some reason not obvious, the patients in Cases 9, 10 and 12 developed a very high nitrogen retention after operation. They showed definite but not marked uremic symptoms. All recovered except the patient in Case 11. This patient was moribund on admission. A chronic and extreme grade of urinary obstruction due to a vesicoprostatic calculus developed suddenly into a complete obstruction, and the patient died following an emergency suprapubic cystostomy.

2. Ether Anesthesia, Open Method: From the nature of the operations in Table 3 it is evident that only the first six cases of Table 4 are comparable with the former. These six cases show an average increase of 13 mg. urea per hundred c.c. of blood following operation, compared with an average of 21 mg. increase in the former series. The remainder of the series in Table 4 shows an average increase of 9 mg. per hundred c.c. blood, although here it is not unusual to meet with cases showing a slight decrease even in the blood urea. In very few of the cases from 7 to 25 was any infusion of salt solution given. A routine infusion as was given the patients reported in Table 3 would doubtless have lowered still more the slight increase in blood urea. The average age of these patients, exclusive of the first six, was about 35. It is interesting to note that the patient in Case 16 who showed a 34 mg. rise was in profound shock for some time during and after the operation. His blood pressure fell to 40, but later was kept at about 90 by intravenous infusion of salt solution with epinephrin. Cases 18 and 19 represent the effect of anesthetic alone and anesthetic with operation on the same patient. At the first attempt satisfactory anesthesia could not be induced, although the patient was incompletely anesthetized for over an hour, and a slight decrease in blood urea resulted. Two days later a craniotomy was performed, requiring four and a half hours. The blood urea was only slightly increased. From this table it is seen that in persons suffering from the ordinary surgical diseases there is, as a rule, only a slight, if any, increase in blood urea concentration following an operation under ether anesthesia. Even in those patients undergoing an operation on the urinary tract in whom, on account of the age and the nature of the operation, one finds, as a rule, the maximum postoperative rise in blood urea, in this small series of cases, at least, this rise was not as high as that observed in similar cases in which nitrous oxid-oxygen-ether anesthesia was employed. This series of cases is evidently too small to serve as the basis for very positive conclusions; but it may be stated that the results obtained here fail to support the contention that nitrous oxid-oxygen-ether anesthesia has a less deleterious effect on renal efficiency than has a pure ether anesthesia.

TABLE 4.—BLOOD UREA FINDINGS WITH ETHER ANESTHESIA, OPEN METHOD

Case No.	Operation	Blood Urea Before	Blood Urea Afterward
1	Prostatectomy	63	102
2	Prostatectomy	39	60
3	Prostatectomy	29	35
4	Prostatectomy	43	34
5	External urethrotomy	56	68
6	Pyelotomy	35	46
7	Appendectomy	29	48
8	Salpingectomy	30	40
9	Lane plate	28	34
10	Bone graft	27	33
11	Fracture	29	39
12	Appendectomy	35	40
13	Cholecystotomy	32	43
14	Hysterectomy	28	41
15	Splenectomy	33	64
16	Splenectomy	36	70
17	Plastic	27	25
18	None	31	30
19	Craniotomy	30	33
20	Osteomyelitis	18	32
21	Gastro-enterostomy	42	42
22	Fracture	41	32
23	Goiter	27	28
24	Gilliam	34	35
25	Hernia	37	58

The effect of operation under gas and ether anesthesia on phenolsulphonephthalein excretion has been studied by Sanford,[12] Block[14] and Miller and Cabot.[15] There is a general agreement that, as a rule, there is a definite decrease in phenolsulphonephthalein excretion after ether anesthesia, the decrease varying roughly with the amount of anesthetic and length of operation.

13. Sanford: Cleveland Med. Jour., 1912, xi, 763.
14. Block, F. B.: The Effect of Operation on Kidney Excretion as Indicated by the Phenolsulphonephthalein Test, THE JOURNAL A. M. A., April 25, 1914, p. 1309.
15. Miller, R. H., and Cabot, Hugh: The Effect of Anesthesia and Operation on the Kidney Function, as Shown by the Phenolsulphonephthalein Test, Arch. Int. Med., March, 1915, p. 369.

Occasionally, however, there is a temporary increase in postoperative phenolsulphonephthalein excretion. In the consideration of the effect of gas oxygen anesthesia on the phenolsulphonephthalein excretion, Miller and Cabot say, "It would seem natural to expect the kidneys to show little or no effect after this anesthesia, whereas our few cases (nine) show even more decrease in output than after ether." It is worthy of note that this statement is confirmed by the results of the small series reported here, in which the increase in blood urea concentration following operation under gas-oxygen-ether anesthesia was slightly greater than the increase following similar operations under ether.

Opportunity has recently been afforded to investigate changes in blood urea following major operations performed under local anesthesia. It is suggestive that in three consecutive cases operated on under local anesthesia there was no postoperative rise in blood urea.

BLOOD UREA DETERMINATIONS IN CASES OF UREMIA

In the series of patients examined, only six showed definite symptoms of uremia. The blood urea findings are given in Table 5.

TABLE 5.—BLOOD UREA FINDINGS IN CASES OF UREMIA

Case No.	Blood Urea at Different Stages	Results
1	190, 220, 260, 290	Died
2	181, 227, 262, 300, 413	Died
3	350, 400, 460	Died
4	146, 255, 293, 104	Improved
5	205, 200, 158	Improved
6	198, 115, 44	Improved

The patients in Cases 2, 4 and 6 were operated on; operations on the other three were not advised. The first figures given are the blood urea values at the onset of definite uremic symptoms, except in the patient in Case 3 who was uremic on admission. The patient in Case 1 had an extensive vesical carcinoma, and developed suddenly an almost complete anuria, possibly from occlusion of the ureters. Case 2 was the emergency suprapubic cystostomy case mentioned before. Case 3 was in a patient with marked arteriosclerosis and urinary obstruction due to prostatic hypertrophy. The patient in Case 4 had a functionless left kidney, and a ureterolithotomy on the right side was necessary. This was followed by a temporary occlusion of the ureter with development of uremic symptoms. The obstruction disappeared and the patient improved rapidly after having had a maximum blood urea of 293. This is the highest blood urea with subsequent recovery encountered in this work. Case 5 was in a patient with prostatic hypertrophy and urinary obstruction. Case 6 was a prostatectomy case in which the patient developed a marked nitrogen retention, but with recovery. The parallelism between the clinical picture and the blood urea findings in all these patients was very striking. Foster[4] emphasizes the possibility of failing to recognize uremic states in patients with only a slightly increased nonprotein nitrogen, and believes that uremia in such persons occurs more frequently than is generally supposed. In all the cases of uremia met with here, there was a very marked increase in blood urea.

CLINICAL SIGNIFICANCE OF PHENOLSULPHONEPHTHALEIN AND BLOOD UREA TESTS IN SURGERY

In the consideration of the value and application of these tests one may assume that a high phenolsulphonephthalein output is practically always associated with a normal blood urea concentration and indicates that the patient has no renal lesion of sufficient importance to contraindicate operation under general anesthesia. Of course, a routine urinalysis should always be made. The rare cases of nephritis with superpermeability may be encountered. On the other hand, a low phenolsulphonephthalein output does not necessarily contraindicate operation; for patients with a low phenolsulphonephthalein output but who have a normal or only slightly increased blood urea concentration often withstand an anesthetic and operation very well, other conditions being normal. A low phenolsulphonephthalein output with a high blood urea concentration, however, does contraindicate an operation under a general anesthetic. Of course, no absolute line can be drawn, but it is just this class of cases which show a marked increase in nitrogen retention after operation. It is to be noted that often a thorough physical examination and urinalysis by themselves will fail to distinguish these cases.

Blood urea tests are of especial importance in following a certain class of cases after operation, namely, those patients whose operations are such that extra-urethral drainage at various points of the urinary tract must be provided. In such cases it is generally impossible to obtain a twenty-four hour specimen of urine; single specimens are often contaminated by discharges from the operative incisions, and it is impossible to do a phenolsulphonephthalein test because the specimens cannot be collected accurately. In such cases blood urea tests are of very great importance as indicators of renal efficiency, and not infrequently it becomes advisable to operate on a patient who already has a ureteral, vesical or urethral fistula. In these cases, as a rule, the blood urea or nonprotein nitrogen determination is the best indicator of the renal condition.

SUMMARY

The agreement between phenolsulphonephthalein and blood urea tests is, as a rule, very striking, though not infrequently a low phenolsulphonephthalein excretion is associated with a normal or only moderately increased blood urea concentration.

These tests are of great importance in selecting the most opportune time for operation so far as renal function is concerned.

Following an operation under a general anesthetic there is, as a rule, an increase in blood urea concentration. This increase is most marked after operations on the urinary tract and especially on patients who already have diminished renal function. In a small series of cases this increase was slightly more marked following operations under gas-oxygen-ether anesthesia than following similar operations under ether.

Blood urea determinations are of great value in the diagnosis and prognosis of uremic states. Not infrequently blood urea concentration can be determined when other renal function tests are very difficult or impossible.

In this investigation definite symptoms of uremia in uncomplicated cases appeared when the blood urea concentration reached 180 to 200.

There is a definite group of patients who have a low phenolsulphonephthalein excretion but a normal or approximately normal blood urea concentration. Many members of this group withstand a general anesthetic without any complications due to renal insufficiency.

PARALYSIS DURING PASTEUR ANTIRABIC TREATMENT

WITH REPORTS OF SEVEN PERSONAL CASES, ONE TERMINATING FATALLY, AND SIX OTHER PREVIOUSLY UNREPORTED CASES *

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In the vast majority of instances, the Pasteur antirabic treatment is neither accompanied nor followed by any complications of importance. The slight pain of the injections, some degree of local or constitutional reaction, occasionally a fairly marked urticaria, and possibly a localized abscess, if the physician is careless in the care of his syringe, are all the discomforts that are likely to be encountered.

There is one rare complication, however, the so-called "treatment paralysis," which has long engaged the attention of those in charge of antirabic institutes, and the true nature and cause of which are not fully understood.

This complication occurs with great rarity, and usually terminates in recovery, so that it should be considered no bar to antirabic treatment when this is evidently needed; but the possibility of paralysis should always be explained to those in whom infection is doubtful, or who are inclined to insist on being treated merely as a sentimental matter of precaution.

The symptoms vary all the way from a slight degree of neuritis, with little or no motor involvement, to an acute ascending paralysis which may be fatal.

Fig. 1 (Case 6).—Spinal cord: cervical cord, considerably crushed, showing dark streaks of fresh softening, which follow in a general way the lines of the connective tissue septa; right lateral column (of the illustration) more swollen than the left.

An analysis of the parts of the body involved in thirty-seven of forty cases reported by Remlinger[1] in 1905 is as follows: legs and sphincters, 17 cases; legs alone, 6; legs, sphincter, arms, face, 4; legs, sphincters, face, 4; arms and face, 1; arms alone, 1; face alone, 1; legs, arms, sphincters and bulbar symptoms, 1; legs and face, 1, and legs, sphincters and bulbar symptoms, 1 case. Thus, in 37 cases, the legs were involved in 34, sphincters in 27, face in 10 and arms in 7 of the cases, while bulbar symptoms were present in only 2.

The frequency of paralysis as a complication of antirabic treatment is variously estimated by different writers, but its real frequency is unknown, since many cases, especially the mild ones, are doubtless not reported.

Remlinger,[1] in 1905, collected 40 instances of paralysis out of 107,712 patients treated, 2 of these being fatal. Stimson,[2] in 1910, stated that later reports had brought the total up to 76 cases, with 4 deaths. Simon,[3] in 1913, collected data up to and including 1911, showing the occurrence of 100 cases among 217,774 persons treated, and mentioned 3 other cases, without indicating the number treated. In this series there were 19 deaths. The incidence of paralysis, however, is evidently different under different methods of antirabic treatment. Simon's[3] figures showed 6 cases among 32,676 patients treated by the classical Pasteur method, 16 cases among 8,659 patients treated by the modified (more intensive) Pasteur method, and only 3 cases among 51,417 patients treated by the Högyes method, with dilutions of fresh fixed virus.

Hasseltine,[4] in a brief review of the literature since Simon's report, mentions cases reported by Higier,[5] Hudovernig,[6] Sterling,[7] Kozewalow,[8] Mucharinski, Abramov, Jochmann,[9] Goldberg and Oszesalski,[10] and Fabricius.[11] Hasseltine adds four cases of his own, one of which was fatal, and states that he has knowledge of two other cases, reports of which are as yet unpublished. He quotes Park and Williams,[12] who state that there have been seven cases of paralysis with two deaths among 6,850 cases treated by the Pasteur clinic of New York City health department, including the year 1913. Hasseltine thus brings the total to 133 cases, up to and including 1913, with twenty-five deaths.

Poor,[13] in 1909, re-

* Owing to lack of space, the complete case reports and the pathologic report of a fatal case are omitted in THE JOURNAL. These will appear in full in the author's reprints, a copy of which can be had by sending a stamped, self-addressed envelope to him.

1. Remlinger: Accidents paralytiques au cours du traitement antirabique, Ann. de l'Instit. Pasteur, 1905, xix, 625.

2. Stimson, A. M.: Facts and Problems of Rabies, Hyg. Lab. Bull. 65, U. S. P. H. S., 1910.

3. Simon: Ueber Lähmungen im Verlauf der Tollwutschutzimpfung, Centralbl. f. Bakteriol., Orig., 1913, lxviii, 72.

4. Hasseltine, H. E.: Paralysis During Antirabic Treatment, Pub. Health Rep., Oct. 24, 1913, p. 2220; ibid., July 30, 1915, p. 2226.

5. Higier, Heinrich: Akute Aufsteigende Landrysche Paralyse im Verlauf von Lyssa humana, Ztschr. f. d. ges. Neurol. u. Psych., Orig., 1912, xii, 353.

6. Hudovernig: Polyneuritis im Anschlusz an antirabische Schutzimpfungen, author's abstract in Neurol. Centralbl., 1912, xxxi, 1166.

7. Sterling: Ueber die akuten Paralytischen Syndrome nach Wutschutzimpfungen, Ztschr. f. ges. Neurol. u. Psych., Orig., 1913, xvii, 160.

8. Kozewalow, S.: Zur Virulenz des fixen Virus der Tollwut für den Menschen, Centralbl. f. Bakteriol., Orig., 1914, lxxiii, 54.

9. Jochmann, G.: Ueber atypische Lyssaerkrankungen und ihre Beziehungen zur Wutschutzimpfung, Deutsch. Ztschr. f. Nerven., 1913, xlvii, 267.

10. Goldberg, J., and Oszesalski, K.: Ein Fall von Lyssa mit meningitischen Symptomen, Wien. klin. Wchnschr., 1913, xxvi, 1981.

11. Fabricius: Acute Ascending Lethal Paralysis After Antirabic Treatment, Arch. Diagnosis, 1909, p. 181.

12. Park and Williams: Pathogenic Microorganisms, Ed. 5, Lea & Febiger, New York, 1914, p. 585.

13. Poor, D. W.: An Occasional Complication of Pasteur Antirabic Treatment, Col. Studies, Research Lab., Dept. of Health, New York City, 1908-1909, p. 121.

ported eight cases of neuritis without paralysis, and four of paralysis, one of which was fatal, among 2,300 patients treated by him at the New York City health department. The figures of Park and Williams, quoted above, include Poor's four cases of paralysis, and three of the cases, including the fatal one, which are reported in the present paper.

My seven personal cases, together with the six other cases which are here first reported, thus bring the total up to 143 cases with twenty-five deaths. This should be corrected to 142 cases with twenty-four deaths, since Poor's fatal case and that of Fabricius were the same.

The mortality among these published case reports, 16.2 per cent., must not be taken as representing the true mortality incident to this complication of antirabic treatment, since it is certain that many mild cases are not reported, while it is likely that reports of most of the severe and fatal ones have been published. Although the average mortality among published reports of paralysis is from 15 to 20 per cent., this is reduced to a negligible figure when compared with the total number of cases treated. Simon's[3] figures, 100 reported cases with nineteen deaths among 217,774 patients treated at various institutes, show a mortality of 19 per cent. among the patients developing paralysis; but so rarely does a case occur that the incidence of the disease in his series was only 0.048 per cent. and the mortality but 0.00812 per cent. of the total number of cases treated.

Fig. 2 (Case 6).—Spinal cord: acute softening, showing as darker staining polycellular strips on either side of the connective tissue septa; the rest of the section, except for numerous small holes, looks practically normal, and shows plain axis cylinders surrounded by their sheaths.

As regards prognosis, the cases may be roughly divided into three classes. The mild ones with transitory paralysis of face or limbs all recover. The acute paraplegias of the lower extremities with or without the involvement of the sphincters usually recover. Death, if it occurs, is likely to be due to cystitis or bedsores after a prolonged illness. Remlinger[1] reported two deaths in forty cases, and Simon[3] three deaths in twenty-four cases of this type. The severest cases presenting the clinical picture of an acute ascending paralysis of the Landry type have a bad prognosis. Simon reported fifteen deaths among thirty-six such cases, a mortality of 41.6 per cent. The deaths in this group occur in a few days from respiratory or cardiac paraysis, or later, from inhalation pneumonia, cystitis or bedsores.

The time of development of symptoms is fairly characteristic. According to Simon,[3] they usually make their appearance from eleven to thirty days after the bite, and between ten and twenty days after the beginning of the injections. Only one quarter of the cases develop after the completion of a full course of treatment, and most of these within seven days thereafter.

In the thirteen cases reported in the present paper, the development of first symptoms of paralysis in relation to the date of the bite, and to the beginning of treatment, is as follows: My seven personal cases: Symptoms first appeared during treatment in six cases, and three days after its completion in one case. Average, twenty-three days after the bite and seventeen days from beginning of treatment. Among the six other cases, symptoms first appeared during treatment in four cases. In two cases they appeared two and ten days, respectively, after treatment. Average, twenty-six days after the bite and seventeen days from the beginning of treatment.

These figures tend to bear out Simon's statement that whether counting from the date of the bite or from the beginning of treatment, the incubation is shorter than in most cases of rabies. This fact is important in view of the contention of some writers that the condition is one of true rabies caused by the bite, but rendered mild by the antirabic treatment.

The onset of the symptoms is usually acute, with pain and numbness of the affected parts, followed by muscular weakness. Prodromal symptoms if present are mild, and consist only of malaise and nervous depression, with perhaps some restlessness, insomnia and anorexia.

Males seem to be affected much more frequently than females. In Simon's[3] publication, among 84 cases there were 60 males and 10 females; 6 of the remaining 14 were unknown. Hasseltine's[14] 4 cases were all in males. Of my 7 personal cases, 5 were male, and of the 6 additional cases reported, all were male. This preponderance of males is probably partly due to the fact that undoubtedly more males are bitten and thus more are treated. Unfortunately, available statistics do not state the relative proportion of males and females in the total number of cases treated.

Young children are rarely affected. Most of the cases occur in adults of varying ages. All of the thirteen cases reported in this paper were in adults between 23 and 62 years of age, the average being 41 years. Seven of the patients were in the thirties.

It is stated that persons who are alcoholic, syphilitic or neurotic are more likely to be affected than those

14. Hasseltine, H. E.: Paralysis During Antirabic Treatment, Pub. Health Rept., Oct. 24, 1913, p. 2220; ibid., July 30, 1915, p. 2226.

who have no such taint, but exceptions to this rule occur fairly often. Paralysis occurs so rarely in proportion to the total number of cases treated that a special idiosyncrasy on the part of the patient must be assumed.

PATHOLOGY

Jochmann,[9] in a careful study of a fatal case, found the lesions disseminated, but especially localized in the lumbar and cervical cord, and associated with a perivascular serous transudation and with marked edema of the meninges of the dorsal and lumbar cord. Small foci of softening were present in the lumbar cord. The large ganglion cells of the gray matter had partly disappeared; some were atrophied and their chromatin had gone into solution. A mild round cell infiltration was noticeable throughout the whole cross-section of the gray matter. The same changes were found in the cervical cord, but to a much less degree. The brain findings were not described, except that Negri bodies were not demonstrated. Rabbits, rats and dogs were inoculated by Joseph Koch from the lumbar cord in this case. Some of the animals, after a long incubation, died of rabies. In two of the rabbits, Negri bodies were found in size and shape as they occur in inoculation rabies.

The serous exudation and meningeal edema which occurred in the lumbar cord in this case would explain the otherwise puzzling clinical fact that in spite of a most severe syndrome, such as complete flaccid paralysis of the extremities, colon, bladder, etc., the symptoms may begin to abate within a few days, and a rapid cure result.

ETIOLOGY

The etiology must still be considered as not definitely settled. The principal explanations advanced for the phenomena observed are:

1. *Anaphylaxis,* due to repeated injections of foreign protein as contained in the rabbit cord employed. This explanation was advanced by Harvey and McKendrick,[15] and entertained by Müller.[16] It is conceded that the Högyes method of treatment with diluted fresh fixed virus, in which the proportion of nerve substance is at a minimum, is far less often complicated with paralysis than is the Pasteur method in which the amount of nerve tissue is much larger. The summary from Simon[3] (Table 1) shows this:

TABLE 1.—INCIDENCE OF PARALYSIS UNDER DIFFERENT METHODS OF ANTIRABIC TREATMENT

Method	Number of Cases Treated	Cases of Paralysis	Proportion
Classical Pasteur method	32,076	6	1:5446
Modified Pasteur method	8,657	16	1:541
Högyes method	51,417	3	1:17139

If the foreign protein material in itself were the cause of "treatment paralysis," the percentage of cases occurring under the classical and modified Pasteur methods should be approximately the same, since they contain about the same amount of nerve substance, differing only in the strength of material used. Yet, as shown by Table 1, paralysis occurs ten times as often under the modified (intensive) as under the classical Pasteur method.

15. Harvey and McKendrick: Theory and Practice of Antirabic Immunization, Scientific Memoirs, Gov't India, New Series No. 30, Calcutta, 1907.

16. Müller, E.: Ueber akute Paraplegien nach Wutschutzimpfungen, Deutsch. Ztschr. f. Nervenh., 1908, xxxiv, 252.

Another point against the anaphylaxis theory is the fact that paralysis has not been produced in animals by the injection of large amounts of normal nerve tissue.

2. *The specific action of a "rabies toxin"* which is in combination with the fixed virus used for treatment. Remlinger[1] and Babes[17] have held that this, together with an idiosyncrasy on the part of the patient, is responsible for the symptoms. Babes showed that animals injected with fixed virus which has been filtered or otherwise treated so as to eliminate infection by a micro-organism do not die of rabies, but develop fever, emaciation, cachexia and paralysis, and die after a protracted period. The theory of a toxin is a plausible one, but there is no agreement in regard to it.

3. *Street virus infection,* received from the biting animal, and so modified by treatment that the disease runs an atypical and usually mild course ending in recovery.

This view was held by Joseph Koch.[18] He inoculated animals from the lumbar cord in a fatal case. Some of these, after a long incubation, died of rabies. He explained the negative results obtained by Babes in four cases by the fact that Babes had used only the brain and medulla for inoculation, whereas it is the cord in these patients that is infective.

More lately Jochmann[9] has defended the same view and has attempted to explain in accordance with this theory the cases such as Franca's[19] case quoted below, which seem to others to disprove it.

Against this view are the following facts: A number of cases have occurred in which the biting animal was not mad, and others in which the patients were not bitten, but had taken antirabic treatment merely as a precaution. Pain at the site of injury is rarely felt in paralysis cases. The incubation period is usually too short for infection with street virus. Paralytic rabies in animals is regarded as an intense rather than an attenuated form of the disease; therefore street virus rabies, modified by treatment so as to become mild, should not be of the paralytic type.

4. *Fixed virus infection due to the treatment.* It is held by some writers that the unusually early appearance of symptoms in occasional cases is against this view. Strong emulsions are not commonly injected during the first days of treatment, yet the paralytic symptoms sometimes appear within seven days after the first injection of strong cord material. They also insist that if fixed virus possessed virulence for man, paralysis would be of frequent occurrence among the thousands of persons treated every year, whereas it is well known that it is very rarely seen.

Among others, Kozewalow[8] holds that fixed virus infection is responsible for most instances of paralysis incident to antirabic treatment. In defense of his position he cites several fatal cases with necropsies followed by animal inoculations:

(*a*) A case of his own with symptoms of ascending paralysis. No Negri bodies were found in the patient's brain. Animal tests comprised thirty-three rabbits inoculated with the brain material. Twenty-four of these died of rabies with an incubation of from six to seven days. The others died of sepsis.

17. Babes and Marinesco: La paraplégie ascendante mortelle survenue après le traitement antirabique, Compt. rend. Soc. de biol., 1908, lxiv, 964.

18. Koch, Joseph: Ueber abortive Tollwut, Ztschr. f. Hyg., 1909, lxiv, 258; Ueber die Entstehung der akuten Periplegie nach Lyssainfektion, Centralbl. f. Bakteriol., Abt. I, Orig., 1912, lxiv, 199.

19. Franca: Du danger de l'emploi des moëlles plus virulentes dans le traitement de la rage, Centralbl. f. Bakteriol., Abt. I, Orig., 1910, lv, 154.

(*b*) Five cases from Bareggi[20] following treatment with fresh fixed virus. The patients died within a week of acute ascending paralysis. Rabbits inoculated from their brains showed symptoms of rabies in from five to six days.

(*c*) Franca's[19] patient, bitten by a dog not rabid (microscopic and inoculation tests negative). Patient developed ascending paralysis on the fifteenth day of treatment. She had received a one-day cord injection for the first time three days previously. On the sixth and eighth days of illness, spinal fluid was withdrawn and injected into the anterior ocular chamber of three rabbits. After eleven days one of these died with symptoms of rabies. Two other rabbits were inoculated subdurally with the cord of this rabbit. Both developed rabies on the seventh day, and died on the ninth day after vaccination. A rabbit injected intramuscularly with the cord of this rabbit died nine days later with typical symptoms of rabies. The patient died on the fortieth day of illness. It is said that this case has modified Koch's view so that he has admitted the possibility of fixed virus as well as street virus infection in these cases.

(*d*) The case of Goldberg and Oszesalski,[10] a boy of 13 years, bitten by an unknown dog which was not captured. He received six injections in the next four days in a Warsaw institute. He then stopped treatment and walked 200 kilometers to his home. Thirteen days after the bite, and twelve days after the first injection, he was taken sick with symptoms resembling cerebrospinal meningitis. The cerebrospinal fluid, however, was negative bacteriologically, and consciousness was retained throughout. The boy died suddenly from respiratory paralysis after five days. No Negri bodies were found. The emulsified spinal cord produced rabies in rabbits in from seven to eight days.

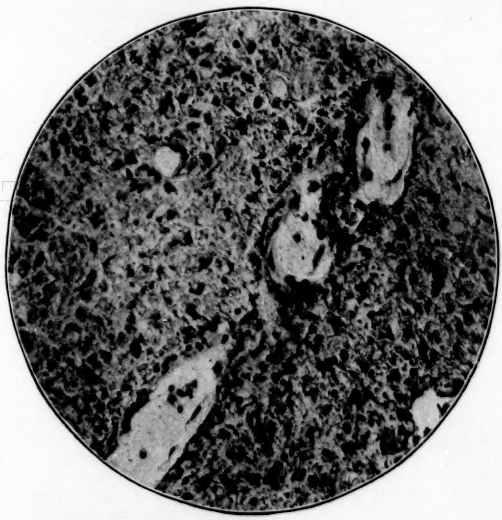

Fig. 3 (Case 6).—Spinal cord: a softened area, more highly magnified than in Figure 2, showing, very poorly, the Gitter or granule cells; these are best seen perhaps in the right lower quadrant; in the left upper corner of the illustration, axis cylinders and myelin sheaths which still retain their form may be seen; note lymphoid cells in the sheaths of the blood vessels.

Kozewalow[8] holds that the short incubation of rabies in the animals inoculated from these cases demonstrates that these paralyses are directly due to fixed virus infection. As further proof of his position, he states the following facts: At the beginning of 1909 the treatment in Cracow was intensified, and the use of a one-day cord begun, whereas, before that, nothing stronger than a two-day cord was used. Shortly afterward they began to have cases of paralysis. Not less than twenty persons were affected in the course of a month. The symptoms were mild, and consisted of paresis of the arm or leg, or partial urine retention, and passed off in one or two days. The use of the one-day cord was then discontinued, and the symptoms stopped. He cites experiments of Kraus and Fukuhara,[21] who proved that different strains of fixed virus in different institutes vary in virulence, since some are virulent subcutaneously in rabbits and white mice, while others are nonvirulent. He gives the results of some experiments of his own, and states that each institute should analyze its own virus and determine whether it can or cannot use an intensive treatment.

In connection with these statements of Kozewalow, the experiences of Poor[13] and of myself are very suggestive. Of Poor's twelve cases, one occurred in 1906, four in 1907, and seven during the nine months between February and October, 1908, after which, up to the time of his report, nine months later, no more cases had occurred. About October, 1908, he began to inoculate rabbits from the cord rather than from the brain of the rabbit of the preceding series. Thus he undoubtedly used a weaker virus, as the rabbits did not show initial symptoms until a day, sometimes two days later than by the other method. He also gave smaller and weaker doses to those who were but slightly bitten.

I have used three different schemata of Pasteur treatment, the full course in each being twenty-one days.

Table 2 will show their comparative strength by indicating the number of injections of each cord in a full course of twenty-one days' treatment. It also shows the number of cases of paralysis and of rabies which occurred among the patients treated under each scheme.

Thus it will be seen that Scheme 2 is somewhat stronger than Scheme 1, since it contains three more injections of two-day cord, and much stronger than Scheme 3, which includes nothing more active than three-day cords. Scheme 2 is very similar to the one employed by the Hygienic Laboratory of the U. S. Public Health Service, Washington, D. C., and by most of those who produce antirabic vaccine in this country, with the following differences: 1. The amount of cord per dose was only two thirds as much as that employed in the Washington scheme. 2. We used a two-day cord instead of one-day cord on the eighth and twenty-first days of treatment.

One of my cases of paralysis, Case 1, occurred in 1912 while Scheme 1 was in use. Other cases may have occurred under this plan previous to 1912, but the records were not available for examination.

Five of the remaining six cases, including the one terminating fatally, occurred between Aug. 15 and Oct. 17, 1913, in the early weeks of the employment of Scheme 2. Although the plan was not changed,

20. Bareggi: Sur cinque casi di rabbia paralitica (da laboratorio) nell'uomo, Gaz. med. lombarda, xlviii, 217.

21. Kraus and Fukuhara: Ueber das Lyssavirus Fermis, Wien. klin. Wchnschr., 1908, p. 1698.

another case did not develop until the following spring. Strangely enough, in November and December, 1913, the rabbits used for producing the antirabic vaccine showed a tendency to develop initial symptoms in five or even four, instead of six days, and it was necessary to use lumbar cord and sometimes cord dried one day, instead of medulla, for inoculation, in order to bring the incubation back to six days. Still no paralysis cases occurred during this period. Finally, May 1, 1914, at a time when the rabbits were coming down in exactly six days, another case of paralysis developed (Case 7, a severe one, with recovery).

TABLE 2.—SCHEMES OF PASTEUR TREATMENT USED BY NEW YORK CITY HEALTH DEPARTMENT

Cord Dried	Scheme 1	Scheme 2	Scheme 3
	Jan. 1, 1912, to Aug. 2, 1913	Aug. 3, 1913, to May 6, 1914	May 7, 1914, to Mar. 7, 1916
	Number of injections in 21 days	Number of injections in 21 days	Number of injections in 21 days
Ten days	3	0	0
Nine days	3	0	0
Eight days	1	1	2
Seven days	1	1	2
Six days	1	1	2
Five days	1	2	2
Four days	5	5	0
Three days	5	7	8
Two days	5	8	0
No. of patients treated	1,468	811	911
Cases of paralysis	1	6 (one fatal)	0
Cases of rabies	4	2	4

Scheme 3 was then adopted. In this no two-day cords are used except occasionally in a case of very severe face bite. Since then no instances of paralysis have occurred (from May 7, 1914, to March 7, 1916, a period of twenty-two months).

In my one fatal case of paralysis, the brain and cord were unfortunately put into liquor formaldehydi, so that no opportunity of trying animal inoculation was afforded. I therefore can express no opinion, based on experience, on the important question whether or not these paralyses are due to fixed virus infection. However, there is no doubt in my mind that in most of the cases, at least, the symptoms are caused, not by street virus infection, modified by the treatment, but by the treatment itself either through the medium of fixed virus infection or through the action of a toxin, or both. In any event there must be a special idiosyncrasy on the part of the patient. Otherwise the cases would be enormously more frequent than they are.

Table 3 shows, as in Simon's series,[3] that the lower extremities, sphincters and face are most often involved, in the order named.

TREATMENT

The treatment of these patients is to be conducted on general principles, according to the parts of the body involved. No special type of treatment based on the peculiar etiology of the condition has been developed.

If the patient has been bitten by a dog known to have been rabid, the preventive inoculation should not be discontinued, since in numerous reported cases they have been persisted in without apparent detriment. They may be discontinued if the biting animal was probably not rabid.

CONCLUSIONS

1. Paralysis complicating the Pasteur antirabic treatment is very rare, but doubtless occurs in mild form more often than is known. It affects adults chiefly, young children almost never.

2. The prognosis is good in cases of mild or moderate degree, but the mortality among the severe cases is high.

3. The administration of antirabic treatment is therefore not entirely devoid of risk.

4. The possibility of the occurrence of paralysis in any particular case, however, is so slight that it should not deter those who evidently need antirabic treatment. A person bitten by a rabid animal is much more likely to develop rabies, which is certainly fatal, than paralysis, which usually ends in recovery.

5. The slight risk of paralysis should always be explained to those who are inclined to insist on antirabic treatment in the absence of clinical or laboratory evidence that the biting animal was rabid.

6. In most instances this paralysis is caused by the antirabic treatment itself (fixed virus infection, or toxin, or both). It is not often due to street virus

TABLE 3.—BRIEF SUMMARY OF CASES FIRST REPORTED IN THIS PAPER

	Case No.	Symptoms Began: Days After Bite	Symptoms Began: Days After Beginning of Treatment	Parts of Body Involved	Improvement Began After	Termination
Author's Personal Cases	1	23	19	Both legs below knees	Few days	Recovery after a few weeks
	2	14	13	Lower extremities and bladder	Few days	Recovery after a few weeks
	3	17	15	Upper and lower extremities, trunk, throat	Few days	Recovery after a few weeks
	4	53	18	Face, both sides	Few days	Recovery after a few weeks
	5	17	13	Both legs below knees	Two days	Recovery after a few days
	6	14	13	Lower extremities, abdominal muscles, intestines and sphincters completely paralyzed. Upper extremities weak	No	Died after 11 days*
	7	20	15	Lower extremities and sphincters completely paralyzed	After 2 weeks	Recovery practically complete after 6 months
Additional Cases	8	54	23	Face, right side	?	Recovery after 4 weeks
	9	14	12	Lower extremities and sphincters	After 9 days	Recovery complete after a few months
	10	53	31	Face, right side	Few days	Recovery after 2 weeks
	11	29	16	Face (slight); legs weak	?	Recovery gradual; complete after 6 months
	12	19	14	Left leg and bladder	?	Poor condition after 10 days; no further report
	13	16	12	Legs and bladder	?	Symptoms persisted after 8 days; no further report

* Necropsy showed spinal pachymeningitis macroscopically. No inoculation tests, as brain and cord were put into liquor formaldehydi by mistake. Stained sections of hardened brain showed no Negri bodies and no special lesions. Cord showed acute softening, most marked in cervical, well marked in dorsal, and less marked in lumbar region.

infection modified by the treatment. Its incubation is shorter than that of most cases of street virus rabies.

7. Variations in the strength of the fixed virus used are probably a factor in the etiology.

8. Personal idiosyncrasy is an important predisposing condition.

CONGENITAL STENOSIS OF THE DUODENUM IN AN ADULT *

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AND
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Congenital stenosis of the duodenum is an uncommon condition, almost always fatal in early life. The reported cases, collected in several careful reviews, have all been in infants dying under 6 months. No new review will be attempted here, except briefly to summarize the conditions described. Louise Cordes[1] found fifty-seven cases reported to 1901 — forty-eight of complete atresia fatal in less than nine days, and nine cases of stenosis without complete blocking, the longest duration of life in which was 6 months.

The literature later has been reviewed by Meusberger[2] and Weber,[3] who found that to 1910 there had been reported between sixty and seventy cases of congenital duodenal stenosis, this number representing from one fourth to one third of the total number of cases involving all parts of the small intestine — about 200. Since 1910, several additional cases have been reported by Roe and Shaw,[4] Gray,[5] Weber[6] (who operated in his case but without success), Hauser,[7] McDonald,[8] White,[9] and others, bringing the total number up to about seventy-five.

In all of the cases reported in the reviews mentioned and in the cases which we have found reported since, the condition has been fatal in from a few days to a few months at the longest.[10] Kermauner[11] states that congenital stenosis of the duodenum may be of such mild grade that it is not discovered until later in life; but he cites no cases. The case we have to report, therefore, is unlike any that we have been able to find described.

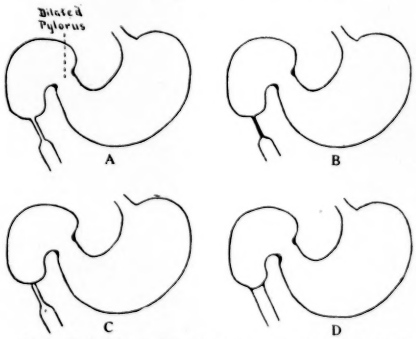

Fig. 1.—Various forms of occlusion: *A*, constricted canal; *B*, fibrous cord; *C*, blind pouch; *D*, transverse membrane.

VARIETIES OF STENOSIS

The occlusion may take any one of varied forms, but most of the cases can be grouped according to a few common types as follows:

1. There is a constricted canal, lined with fairly normal intestinal mucosa (Fig. 1 *A*). The occlusion is incomplete.

2. A fibrous cord represents the constricted intestine. It may be 1 or 2 cm. in length, or may extend from the pylorus to the papilla of Vater (Fig. 1 *B*).

3. The duodenum may end as a blind pouch, and the intestine begin again with a constricted lumen from the tip of this pouch, like an appendix springing from the cecum (Fig. 1 *C*). Such a case is reported by Roe and Shaw.[4]

4. Two cases have been reported of occlusion by a comparatively thin transverse membrane[12] (Fig. 1 *D*); in one of these,[13] there were found smooth muscle fibers between the layers of epithelium, indicating the structure of actual intestinal wall in the membrane.

5. The relation of the occlusion to the common duct is of interest. Most of the obstructions occur in its immediate neighborhood, either above or below the papilla, though they may occur in any portion of the duodenum. In four cases of partial occlusion,[1] the common duct opened into the stenosed portion. Cordes also reported a case in which the blind pouch of duodenum was connected with the papilla of Vater by a small canal having the microscopic characteristics of the gallduct. She found two or three similar cases reported, and considered that in several other instances such a connection must be assumed to explain the vomiting of bile-stained material in cases in which the duodenal occlusion was above the papilla. No satisfactory embryologic explanation of this curious anomaly of the gallduct has been offered.

The possible causes of congenital stenosis of the duodenum suggested in the literature were: (1) errors of embryologic development of the duodenum; (2) volvulus in fetal life; (3) fetal peritonitis (usually tuberculous or syphilitic); (4) ulceration; (5) pressure from new growths; (6) abnormal persistence of the omphalomesenteric duct; (7) traction on the intestine, due to hernia; (8) circulatory anomalies (absence of arterial branches); (9) embolism of the superior mesenteric artery, and (10) pressure from an enlarged head of the pancreas.

In forty-nine of the fifty-seven cases, no evident cause could be found except faulty development of the duodenum itself. That this is the usual cause is also suggested by the most common location of the constriction, near the orifice of the common duct, that is,

* From the Surgical Service of the University of California Hospital.

1. Cordes, Louise: Arch. Pediat., 1901, xviii, 401.
2. Meusberger: Virchows Arch. f. path. Anat., 1910, cxcix, 401.
3. Weber: Med. Klin., 1910, vi, 1294 and 1334.
4. Roe and Shaw: Lancet, London, Sept. 30, 1911.
5. Gray: Glasgow Med. Jour., August, 1910.
6. Weber: Med. Klin., 1913, ix, 411.
7. Hauser: Monatschr. f. Geburtsh. u. Gynäk., 1911, xxxiv, No. 6.
8. McDonald: Am. Jour. Med. Sc., July, 1913.
9. White: Jour. Obst. and Gynec. Brit. Emp., 1912, xxi, No. 4.
10. Ochsner (Ann. Surg., 1906, xliii, 80) has reported a condition of thickening of the circular muscle fibers of the duodenum, which he considers to be the cause of symptoms in adult life. But this condition, he stated, was constantly found below the papilla of Vater, thus differing from true congenital stenosis, which occurs with equal frequency above and below the common duct. Boothby (Boston Med. and Surg. Jour., July 18, 1907) was unable to confirm Ochsner's findings.
11. Kermauner: Virchows Arch. f. path. Anat., 1912, ccvii, No. 3.
12. Weber (Footnote 3). Keith: Brit. Med. Jour., Feb. 5, 1910, p. 301.
13. Keith (Footnote 12).

at about the junction of the embryonic foregut and midgut, and at a point where very active embryologic processes take place — the development of the liver and pancreas — and where other congenital anomalies (diverticula) are prone to occur. Furthermore, atresia of the duodenum is frequently associated with other defects which are clearly developmental. The developmental origin is also indicated by the work of Tandler and later by Forssner,[14] who found that the second portion of the duodenum, which is at first open during the latter part of the first month of embryonic life, becomes occluded by proliferation of its own epithelium, and remains so during nearly the whole of the second month. It is suggested that a failure in the absorption of this occluding plug of epithelium is responsible for some of the atresias found at birth.

The only constant symptoms of the condition are persistent vomiting of everything ingested, beginning at birth, with emaciation and death in a few days (the symptoms being somewhat modified, of course, in the few cases of incomplete obstruction). Cases in which the obstruction was below the orifice of the common bileduct have been diagnosed during life by the passage of white meconium and the vomiting of bile-stained material.

The treatment is, of course, only operative, but so far has not had success. Braun[15] in 1902 collected from the literature the reports of twenty-five operations for congenital intestinal stenosis of all parts of the small intestine — enterostomies, gastro-enterostomies, and entero-anastomoses—with a mortality of 100 per cent.

CASE REPORT

History.—F. S. (U. C. Hospital No. 8686), man, aged 24, American, transferred from the medical service of Dr. H. C. Moffitt, presented essentially negative family and past history and habits. His illness began twelve years ago at the age of 12, with a year of intermittent, rather indefinite pain in the lower abdomen, followed by three and a half years of freedom, and then four years more of similar attacks at intervals of from three to four weeks. The pain was always below the umbilicus, extending 5 cm. to either side of the midline without radiation. There was no definite relation to food. It was relieved by hot drinks and occasionally by defecation. It was usually worse at night.

He had had no definite pain for five years, but four years ago vomiting had begun, and had grown progressively worse, usually coming after the evening meal, sometimes after other meals. There had never been hematemesis or melena. During this four years there had been progressively increasing weakness, with dizziness, etc. His appetite had been good, but he had limited his diet through fear of vomiting, finding that liquid food gave him least trouble. He had lost 15 kg. in the past seven years, 6 kg. of this during the past six months. He now weighed 51 kg. (112 pounds).

Physical Examination.—This showed much emaciation. The abdomen was scaphoid except for a prominence about the umbilicus (distended stomach), over which there was marked peristalsis from left to right. The lower border of the stomach was seen and percussed midway between the umbilicus and the symphysis. Liver, spleen and kidneys were not felt. The reflexes were normal. There was, however, a slight but definite Chvostek's sign. No Trousseau's sign was made out. Erb's was doubtful. Physical examination otherwise was not remarkable.

Wassermann test on blood serum was negative.

Stomach wash, fasting, yielded 80 c.c. of reddish brown fluid, with free hydrochloric and lactic acid present but no occult blood. Sarcinae were present in large numbers. There were no Oppler-Boas bacilli.

Ewald meal showed: Free hydrochloric acid, 22; total acid, 42 (low normal).

Blood and urine were normal.

Stool examination was negative to guaiac.

Unfortunately a bismuth roentgenogram of the gastro-intestinal tract could not be obtained.

A diagnosis of pyloric stenosis was made, thought to be due either to an old ulcer or to a congenital condition.

Operation.—The stomach was found to be much dilated and low in the abdomen. There were some old adhesions across both the anterior and posterior aspects of the stomach toward the pyloric end, but none about the duodenum except two very thin strands between the pylorus and gall-bladder. The pyloric ring was much dilated. The first portion of the duodenum was dilated, the upper wall forming a definite pouch. Just distal to this dilated portion at about the junction of the first and second portions of the duodenum and above the entrance of the common duct, the intestine was evenly constricted to one third or less of its normal diameter for about 1.5 cm. There was no thickening of the wall, and no scars could be found and no abnormalities of the peritoneum to account for the constriction.

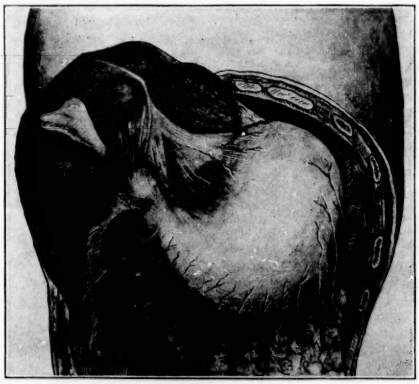

Fig. 2.—Conditions found at operation (semidiagrammatic).

The gallbladder was free, not distended or thickened. There was a slight constriction, causing a suggestion of sacculation of the outer third of the fundus (probably congenital).

The appendix was long, atrophic and buried in old adhesions (probably the explanation of the patient's earlier attacks of pain).

A posterior gastro-enterostomy was done, and when the stomach was cut into, marked thickening of the wall was noted in spite of the dilatation of the organ, indicating long-standing obstruction.

The patient vomited during the first forty-eight hours following the operation, the vomitus containing considerable blood. Following this he was delirious much of the time, and on this account was given occasional nasal feedings. On the fifth day he was apparently much improved and took considerable nourishment, but vomited small amounts twice during the afternoon. Quite suddenly in the evening, the pulse rate increased and respirations became shallow and rapid, and he gradually sank into coma and died in six hours.

Necropsy.—The necropsy performed by Dr. J. V. Cooke showed the conditions described at operation. In addition there was marked dilatation of the stomach with partial breaking down of the gastro-enterostomy wound, leakage of stomach contents into the peritoneal cavity, and beginning peritonitis.

14. Forssner, quoted by Keith (Footnote 12) and also by Shaw and Baldauf: Albany Medical Ann., 1908, xxix, 148.
15. Braun: Beitr. z. Chir., 1902, xxxiv, 993.

When preserved in liquor formaldehydi, the constriction of the duodenum presented the appearance of an obstructing fold of the duodenal wall rather than of a narrow tube, 15 mm. long, as it had appeared before fixation. Grossly and microscopically the constriction was covered with normal mucous membrane, and careful search failed to reveal any scar tissue or other evidence of old ulceration. The condition was therefore considered to be congenital in origin, the type of occlusion corresponding to that represented in Figure 1 *A*. The possibility of the condition being caused by an old ulcer which had disappeared without leaving any trace of itself was, of course, considered; but this is quite improbable, and is all the more unlikely in view of the rarity of duodenal ulcer in early youth.

In 302 cases of ulcer of the duodenum reported by Moynihan,[16] there were but three occurring under 20, his youngest patient being aged 17. In the case here reported, symptoms of stenosis had already developed by the age of 20.

Why symptoms due to congenital duodenal stenosis should appear only after several years of life and then grow progressively worse is difficult to understand. It is possible, however, that in the process of growth the constricted portion may not have increased in diameter in proportion to the rest of the duodenum, so that the *relative* degree of obstruction was increased. Then, too, as the obstruction began to affect the patient's nourishment, dilatation and ptosis of the stomach were undoubtedly increased and, in turn, tended to aggravate the stasis, thus producing a vicious cycle.

It is of interest to compare the history of this case with those of five cases reported by Harris[17] of constriction of the duodenum by what he considered to be a congenital fold of peritoneum derived from the lower border of the embryonic ventral mesogastrium. This fold extended from the gallbladder across to the mesocolon in such a way as to constrict the duodenum at the second portion. The duodenal wall itself was normal, the lumen of normal size, and the condition was relieved in each case by dividing the constricting fold. The histories of his cases were similar to that of our case — characterized by their chronicity, symptoms beginning in youth or early adult life and growing progressively worse, with periods of improvement but not of complete freedom from distress. They presented rather indefinite epigastric distress, often with a few attacks of quite sharp pain. They differed, however, from the case here reported in that vomiting was not a characteristic symptom. The point of interest is that, if Harris is right in considering the condition to be congenital, his cases show the possibility of congenital constrictions of the duodenum causing symptoms which do not begin until after several years of life.

SUMMARY

1. Congenital duodenal stenosis is a rare condition, almost invariably fatal in infancy.

2. A case is reported in an adult, characterized by a history beginning in adolescence before the usual ulcer age and growing progressively worse, the symptoms and findings indicating benign pyloric stenosis.

16. Moynihan: Ulcer of the Duodenum, Ed. 2, 1912, pp. 317 and 428.
17. Harris, M. L.: Constrictions of the Duodenum, THE JOURNAL A. M. A., April 18, 1914, p. 1211.

Influence of Digestion.—A light supper, a good night's sleep and a fine morning have often made a hero of the same man who, by indigestion, a restless night and a rainy morning would have proved a coward.—Chesterfield.

PNEUMOTHORAX OF UNCERTAIN ETIOLOGY *

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Pneumothorax is said to be spontaneous or natural when there is no evident external or internal cause. There must be a cause, but in many cases it is difficult to find and impossible to prove. The report of the following case very well illustrates these points:

History.—The patient is a man, aged 25, who has been under my observation for three years with several routine physical examinations. Nothing abnormal has been detected in heart or lungs. He was always considered a healthy, active young man. His father died of heart trouble several years ago; his mother is living and well. He has no brothers or sisters. There has been no tuberculosis or cancer in the family.

His habits are good. He has never had syphilis. He smokes a pipe four or five times daily and takes an occasional glass of beer. There has been no recent change in weight or mode of living. He has had a few colds lasting only a few days, and also some very slight digestive complaints. There is no history of infectious diseases. There has been no chronic cough, loss of weight, continued fever, night sweats or suspicion of tuberculosis. The patient complained one year ago of some pain and tenderness directly over the ensiform cartilage. This lasted three weeks unassociated with cough or fever, and was diagnosed as a strain.

Present Illness.—On the day previous to examination the patient took his usual cold shower, and without any unusual muscular or respiratory effort felt something "give way" or "grow loose" in his episternal region, inside of him. This gave him a queer indescribable sensation as of something having gone wrong. It caught him to draw a deep breath, and full inspiration was attended by a short, dry, expiratory cough. He went to bed directly, but had to lie perfectly quiet, any change in position being uncomfortable. If he attempted to rise it caught him in his back like a lumbago. He did not consider himself seriously ill, and did not feel sick; yet he believed that something had gone wrong inside of him. There was no dyspnea, nausea, chill, fever or sweat, and the patient was comfortable when quiet.

Physical Examination.—The temperature was 98.6; pulse, 80; respiration, 20. Inspection revealed a well developed young man, not sick and yet worried, somewhat pale and anxious. There was no dyspnea or cyanosis when he remained quiet, but rather marked dyspnea on the slightest exertion. The left chest was fuller than the right, the intercostal spaces bulging rather than concave, and no expansion. The right chest was normal in shape and respiratory excursion. There was no visible apex impulse to the left of the sternum but some cardiac impulse in the substernal notch. The apex impulse was not palpable. Fremitus was absent over the entire left chest, and normal over the right chest. There was no expansion of the left chest, and 1 inch expansion of the right chest. Percussion revealed a dull tympany from the apex to the base of the left chest, with no area of cardiac dulness. The right chest was normally resonant, with cardiac dulness extending 2 inches to the right of the sternum in the fourth intercostal space. Breath sounds were inaudible around the base of the left chest. About the middle of the left chest there was amphoric breathing with a metallic echo. Coin sound through the left chest gave a typical metallic click. There were no râles. Whispered voice over the entire left chest had the same amphoric character as breath sounds. The right chest was normal. There were no succussion and no metallic tinkle. Roentgenoscopy revealed the left chest full of air, the lung being displaced upward and inward, and the heart displaced slightly to the right. This slight displacement of the heart to the right did not accord with the entire absence of cardiac dulness to the left of the sternum.

* Read before the Washington Heights Medical Society, April, 1915.

Subsequent History.—One week later: Temperature, pulse and respiration have always remained normal. The patient has felt daily improved. Pain on sitting up has become less noticeable. Cough on full inspiration is less marked. Physical examination has showed continuation of air in left chest, though amphoric sounds in upper chest have become fainter and fainter. A few subcrepitant râles have been heard from time to time in the fourth and fifth intercostal spaces just outside the nipple line. These entirely cleared. There is still no appreciable expansion of the left chest, and cardiac dulness remains to the right.

Two weeks later: Temperature, pulse and respiration have remained normal throughout the week. Left chest has regained an expansion of one-half inch. Breath sounds have gradually returned to the left upper chest anteriorly and posteriorly, but are still faint with bronchovesicular character below. Cardiac dulness is now elicited 3 inches to the left of the midsternal line in the fifth intercostal space, and heart sounds are now audible to the left of the sternum instead of on the right, as previously.

Three weeks later: Patient is feeling about normal. Roentgen and physical signs show normal chest except for a very small amount of air in left costophrenic chink.

Four weeks later: Lungs are absolutely clear. Heart is normally situated. Patient is feeling fine. There is no dyspnea or cough.

Five weeks later: Patient is normal.

Six months later: Patient is normal.

COMMENT

The etiology of pneumothorax in this case must have been one of the following conditions:

1. Generation of air within the pleural chink.
2. Entrance of air from below the diaphragm or from the esophagus.
3. Entrance of air through the chest wall.
4. Entrance of air through the lung.

In order to be generated within, there must be air-forming organisms present, in which case there would be some fluid and some infection. Physical signs and roentgenoscopy show no fluid, and symptoms show no infection. The sudden onset of symptoms would also be against infection.

Air from below the diaphragm or a hernia would show in the roentgenogram and not heal quickly. Esophageal lesion would be detected in the same manner.

Air through the chest wall would necessitate some injury such as a stab wound. This case shows none.

There remains as the causative factor air from the lung. There must, then, have been a break in the lung surface. This might have been caused by injury, deformity, neoplasm or inflammation. Deformity or a neoplasm would have persisted. Injury to the surface of the lung would have been due to so great a difference between intrapulmonary and intrapleural pressure as to cause rupture. This would not have been sufficient to rupture the lung unless there were some structural weakness brought about by some inflammatory surface lesion. Such a lesion might have been tuberculous or nontuberculous. Against tuberculosis are the following:

No history of tuberculosis in the family, no previous history of tuberculosis in the patient, no subsequent history of tuberculosis in the patient, no symptom or localized sign of tuberculosis, no sign in the roentgenogram, and the acute condition of the case. This, therefore, leaves as the cause some inflammatory lesion of the lung surface, nontuberculous probably, very small with pin point rupture and prompt closure.

MECHANICS

The lungs are suspended within a noncollapsible chest wall. They tend to collapse because of their elasticity. This collapsing force equals about 4 mm. of mercury at the end of expiration and about 8 mm. of mercury at the end of inspiration; on forced inspiration it may fall to 30 mm. of mercury. So long as the glottis is open, allowing free communication with the outside air, there is no greater variation of pressure within the pleural spaces; when the glottis is closed, as in coughing or sneezing, then intrathoracic pressure is increased; also when the glottis is closed during inspiration, then intrathoracic pressure is lessened. That the normal lung will stand considerable variation in pressure may be demonstrated by forcibly inflating the excised lungs of a dog with a pair of hand bellows.

CONCLUSION

On taking his cold shower the patient may have suddenly taken a deep breath, thus lowering the pressure within the pleural space, rupturing a small point of the lung surface. This may also have been brought about by sudden coughing or sneezing. Inasmuch as the variations in pressure are not sufficient to rupture a normal lung, there was probably a small focus of nontuberculous softening on the surface of the lung. While there was prompt healing of the communication between the intrapleural and intrapulmonary air, it does not seem correct to term the case spontaneous pneumothorax, any more than that a fire of unknown origin should properly be called spontaneous combustion.

411 Convent Avenue.

A CASE OF PHLEBITIS MIGRANS*

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A married woman of 26 was in her fourth pregnancy in five years. The first two babies had died of marasmus; the third was living and well. The husband was in good health. There had been no known tuberculosis or cancer in the family. Except for measles and scarlet fever in childhood, and malaria five years before, the patient had never been ill. General physical examination showed normal findings excepting for rather marked anemia.

The patient did not menstruate between the last two pregnancies. She presented herself for admission one week before the onset of labor because the "waters had broken." There had been only a little dribble, but it continued in small amounts until labor set in.

At admission the temperature was 99.2. Labor pains had begun three hours before. The abdominal tumor corresponded to that of an average sized baby in cephalic presentation. Only vaginal examination was made seven hours after onset of labor. The cervix was found to be three fourths dilated, and the vertex presenting in the occipitolevoanterior position. The labor progressed without incident, and a 7¼ pound baby was born at the end of the twelfth hour by normal mechanism. No laceration of the perineum occurred. The placenta came away after ten contractions. The uterus was atonic, and in spite of ergot and massage there was rather more than the average amount of bleeding, but the pulse did not go above 90.

The temperature remained between 99 and 100.2 for the first ten days of an otherwise uneventful convalescence. On the eleventh day the patient had a drenching night sweat, and there was a sharp rise of temperature to 104, pulse 110. The breasts were normal, the fundus well down and not tender. The white count was 17,000, hemoglobin 60 per cent. There was marked tenderness and some induration over the course of the right saphenous vein, and the leg soon became swollen and edematous. Treatment consisted in elevation, use of the ice bag, absolute rest, etc. After three days there was a marked drop in temperature and pulse, and although the tenderness and swelling extended progressively down to the foot, there was a gradual but steady improvement until the beginning of the fourth week. At this time the temperature again rose sharply to 104.5, pulse 135, and marked tenderness, induration and swelling developed in the right thigh. The patient was nauseated a great deal during the next two

* From the Hospital of the Harvard Medical School of China.

weeks, vomited at intervals, and complained of pain in the epigastrium much aggravated by food. The pulse remained at about 130, became weak and irregular, and there was increasing prostration in spite of the fact that the swelling and tenderness in the legs all but disappeared.

During the sixth week of illness these symptoms recurred first in the left, and then in the right leg, with pain in both legs and feet, which became so severe as to prevent sleep, except after morphin. By this time the patient had lost much weight and strength, and several consultants gave a very gloomy prognosis. There followed, however, a period of general improvement, during which the patient was again able to take food, and for several days the pulse and temperature remained at about normal. During the eighth week induration, tenderness and swelling appeared progressively over the left side of the neck, axilla, arm and left chest. There was also increased swelling in the left flank and lower abdominal wall, which was spastic and very tender to palpation. The swelling in both legs increased, and pain in the legs and feet became so severe as again to require the administration of morphin. The temperature was from 102 to 103, the pulse from 130 to 140, and at times almost impalpable. During this recrudescence, which lasted about two weeks, gangrene developed over the anterior aspect of both feet, which resulted finally in the separation of the whole thickness of the skin and partial sloughing of the tendon sheaths.

After another interval of improvement, there was a fourth relapse, during which the right side of the neck, right axilla and arm became involved, and then successively the occiput, whole scalp and face. During the height of this attack, sharp pain developed in the chest, aggravated by deep respiration; but no friction rub or other signs were elicited. There were nausea and vomiting lasting several days. The voice became husky and the patient complained of severe headache, and pain in all affected parts, but most marked in the feet. The symptoms abated toward the end of the tenth week, for a period of about twelve days. This was followed by the sixth and last relapse, characterized by abrupt rise of temperature from normal to 102; the pulse was accelerated from 120 to 140, and again became irregular and at times almost impalpable. At the beginning of this attack there was a good deal of vomiting and violent headaches. The swelling in the neck and scalp, which had begun to subside, also increased. After four days the patient became very drowsy, suffered lapses in memory, and finally became partially irrational for several days. Ophthalmoscopic examination: "Papillitis of both optic nerves. Outline of both disks entirely lost. Vision almost normal, but patient troubled with duplication of objects." There was no neck rigidity or abnormality of reflexes. No food could be taken by mouth, but rectal alimentation was retained. At the beginning of the thirteenth week the temperature fell to normal, where it remained. The patient became clear mentally and began to take food. From this time improvement was slow but uninterrupted. The swelling and tenderness gradually disappeared except in the legs, which remained edematous for several months.

During the first relapse, blood culture revealed a nonmotile spore-forming bacillus which did not correspond to *B. subtilis* in its cultural characteristics. An autogenous vaccine was prepared and given in large increasing doses. Goat's serum was also prepared from time to time, and injected subcutaneously all without apparent effect. The granulations on the feet were grafted by the Thiersch method.

The patient was discharged in the nineteenth week in good general condition. Nine months after the onset of the illness there was no swelling or disability, the patient was in excellent health and of maximum weight, and was able to play golf and tennis. She was admitted two months after this time and an appendectomy done for subacute appendicitis.

SUMMARY

In a case of phlebitis, there were involved, successively, and during the course of six fairly definite attacks, both legs, the left flank and abdomen, the chest, the axillae, the arms and hands, both sides of the neck, the scalp and the face, with eye and mental symptoms, complicated by gangrene of both feet. There was complete recovery.

ABORTIVE TREATMENT OF SYPHILIS

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Oppenheim says that 80 per cent. of cases of syphilis can be aborted if treatment is begun in the early stage of the chancre, three or four weeks after infection, when spirochetes are positive, the Wassermann test negative, and no glandular enlargement and chancre can be excised. If the chancre is not excised, only 30 per cent. can be aborted. The abortive treatment consists of four injections of salvarsan and twelve injections of mercuric salicylate given weekly.

For the past two years I have used the following combination to destroy the chancre when excision is not possible: calomel, 10 parts; zinc sulphate, 10 parts, and chlorin water, 50 parts. The combination has a selective action on the chancre, rendering the entire chancre necrotic, and has no effect on the healthy tissue. It is applied on a pledget of cotton and covered with the prepuce or a piece of oiled silk and left in place for twenty-four hours. In another twenty-four or thirty-six hours the chancre can be lifted out of its bed, leaving a healthy ulcer which heals in a short time under simple dressings. I believe this destruction is as effective as excision.

The same combination will also destroy a chancroid in one application, converting the soft chancre into a simple ulcer, and reducing the danger of a bubo to a minimum. The application causes considerable smarting and swelling of the prepuce, and the patient should be informed that it will do so in order that he may not become frightened and remove the dressing.

Therapeutics

HEMORRHAGIC DISEASES

(*Continued from page 1701*)

PURPURA HEMORRHAGICA

The name purpura hemorrhagica is often loosely applied to any condition in which there are hemorrhagic spots in the skin. It has been used in connection with various idiopathic purpuras such as purpura simplex, characterized by small isolated petechiae in the skin and with either no symptoms or very slight symptoms. It has also been wrongly used when petechiae have been present in an arthritic condition such as Schönlein's disease or Henoch's purpura. The true purpura hemorrhagica, also known as morbus maculosus of Werlhof, is a clinical entity with characteristic signs, symptoms and blood changes.

Purpura hemorrhagica is usually characterized by severe small hemorrhages not only into the skin but also into and from the mucous membranes. Cases have been known in which the hemorrhages were confined to the mucous membranes and were absent from the skin. In this condition also occur slight or severe constitutional disturbances. Fever may be present, and also nausea and vomiting. The hemorrhages may be present in any of the mucous membranes, the commonest being the mucosa of the nose with resulting epistaxis. There may be hemorrhages from the rectum or from the stomach. The orbits and the mucosa of the mouth and throat may be studded with the petechiae. In the larger number of cases the skin is involved, and the skin in no part of the body is immune from these hemorrhages. The hemorrhages may be present as blebs or as petechiae of varying size.

The etiology is unknown. It has been attributed to changes in the blood or in the walls of the blood vessels. A bacteriologic etiology has never been given much approval, although purpuric conditions have

been produced by the injection of different bacteria. Such purpuras are not true purpura hemorrhagica, as they are also found in infections and result from the bacteremia.

The common belief has been that the disease is caused either by changes in the walls of blood vessels, probably of a degenerative nature, or by some change of the constituents of the blood. Pathologic studies show that the alterations in the walls of the blood vessels are not constant. Experiments have been tried to produce changes in the vessel walls by injection of toxic substances. In some of these, small multiple hemorrhages have resulted; but the evidence obtained has not definitely shown these experimental conditions to be true purpura hemorrhagica. There is, however, one constant change in the blood in every case of purpura hemorrhagica. This has been very well demonstrated by Duke,[1] who, in a series of cases, studying various factors involved in hemorrhagic disease, found that all of the cases of purpura hemorrhagica showed a marked diminution of the blood platelets. Whereas in normal cases the count is between 200,000 and 400,000, in purpura hemorrhagica it is below 10,000, many of the counts even below 1,000, and occasionally nearer zero. He found the coagulation time normal and the clot at any bleeding point firm and without retraction. In this way a differential diagnosis could be made from hemophilia, in which the blood platelets are normal in number but the coagulation time is delayed.

Duke also noticed that the lower the blood platelet count, the more severe were the symptoms. In patients with a blood platelet count of 40,000 or over, there was no tendency toward hemorrhage. That blood platelets are concerned in some way or other in purpura hemorrhagica has been shown in another way by Ledingham,[2] who was able to produce in guinea-pigs a disease similar to purpura hemorrhagica by the injection of antiblood platelet serum prepared by immunizing rabbits with guinea-pig blood platelets.

The conclusions drawn by Duke were substantiated when two cases were transfused directly with immediate relief, and it was concluded that the improvement was due to the increase in blood platelets. Emsheimer[3] more recently reported a case of purpura hemorrhagica, in which intramuscular injections of whole blood were given with marked improvement, after other methods had failed. He was led to employ this means because the injection of blood is considered to be a stimulus to the production of thromboplastic substances, and the intramuscular method is so much easier and more rapid than transfusion. His method was very simple, and consisted of drawing 20 c.c. of blood from the median cephalic vein of the donor with a syringe and injecting it immediately into the gluteal muscle. This was followed by a gradual disappearance of the petechiae and a clearing up of the urine, which had been black at times from the blood contained in it.

Howard[4] obtained good results from four subcutaneous injections of whole blood in amounts varying from 28 to 90 c.c.

1. Duke, W. W.: The Pathogenesis of Purpura Hemorrhagica with Especial Reference to the Part Played by Blood-Platelets, Arch. Int. Med., November, 1912, p. 445.
2. Ledingham: Lancet, London, 1914, clxxxvi, 1673.
3. Emsheimer, H. W.: Intramuscular Injections of Whole Blood in the Treatment of Purpura Hemorrhagica, THE JOURNAL A. M. A., Jan. 1, 1916, p. 20.
4. Howard: Kentucky Med. Jour., 1914, xii, 606.

Goldstein,[5] in a case of purpura hemorrhagica with marked purpuric blotches in the mouth and spontaneous bleeding from the nose and gums, caused cessation of the bleeding by the subcutaneous injection of 20 c.c. of antidiphtheritic serum.

Frank[6] administers arsenic in conjunction with local or intravenous injection of an extract of blood platelets. The blood platelets are contained in normal human blood plasma, which is rich in them. About 400 to 500 c.c. of blood from a donor is collected in a vessel containing herudin (an extract of leech) to prevent coagulation. Ten mg. of herudin are used for every 75 c.c. of blood. The blood is placed on ice and slowly centrifugalized, after which the plasma is drawn off and used for injection. This is all done under strict aseptic conditions. Before it is used, blood tests should be conducted to ascertain if there is any hemolytic or agglutinative action of the prepared plasma on the patient's blood corpuscles.

Bodenheimer,[7] in a severe case of purpura hemorrhagica, obtained excellent results by the intramuscular injection of horse serum. He used 10 c.c., and with it he administered calcium lactate in 2 grain doses, every two hours, and gave gelatin by the mouth. Hemorrhagic blisters in the mouth showed a marked improvement, and the epistaxis ceased. A second administration of 10 c.c. of horse serum caused the cessation of bleeding by rectum.

Another method reported with very good results is the one described by Halpern,[8] in which coagulen is injected subcutaneously. Coagulen is prepared from the blood platelets of animals. It is a yellow powder, readily soluble in water and not destroyed by sterilizing. It may be used intravenously or subcutaneously, and when ready for use, 1 grain is dissolved in 10 c.c. of distilled water.

The most striking results in purpura hemorrhagica were obtained by Ottenberg and Libman[9] by means of transfusions. They report nine patients in whom transfusions were made twelve times. Of these six recovered completely, and one other left the hospital improved.

The prompt cessation of the hemorrhages in all of the patients seemed remarkable. The two cases in which there was no improvement were of an unusual form of purpura hemorrhagica, both being post partum. It is very likely that their pathogenesis was different from that of the other cases.

(To be continued)

5. Goldstein: Laryngoscope, 1914, xxiv, 1.
6. Frank: Berl. klin. Wchnschr., 1915, lii, 500.
7. Bodenheimer: New York Med. Jour., Oct. 17, 1914, p. 774.
8. Halpern: Beitr. f. klin. Chir., 1915, xcv, 324.
9. Ottenberg and Libman: Am. Jour. Med. Sc., 1915, cl, 36.

Thymol.—Thymol was first obtained from thyme—whence its name. Commercially it has been made almost entirely from ajowan seed. This seed, which grows in northern India, is manufactured into thymol in Europe, chiefly in Germany and France. As soon as the European war broke out thymol became a scarce drug because the war prevented the importation of ajowan seed. It is stated that the importations fell from 18,000 pounds in 1914 to a little more than 2,000 pounds in 1915. Now it is announced (U. S. Department of Agriculture, Bulletin 372) that the production of thymol may be made profitable in the United States, the source being the common horsemint (*Monarda punctata*). The government bulletin describes how by cultivation the plants have been improved to a point which, it is said, makes the manufacture of thymol from horsemint profitable in the United States.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . . "Medic, Chicago"

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SATURDAY, JUNE 3, 1916

THE RELATION OF THE SPLEEN TO HEMOLYTIC JAUNDICE

Among the positive results which have been described as a sequel to the removal of the spleen are not only an increased resistance of the red blood cells but also a decreased tendency to the jaundice that follows the destruction of these cells by hemolytic agents. The spleen is regarded by many investigators as the natural location for the disintegration of erythrocytes after administration of hemolytic poisons.[1] The hemoglobin there liberated is carried directly by the portal system to the liver, where it may be in large measure removed, converted into bile pigment, and thereupon excreted in the bile. It is readily conceivable that if liberated hemoglobin is thus present in large quantity, some of it may escape this sequence of events; and the pigment appearing in the tissues and the urine may thus produce jaundice. Inasmuch as after splenectomy the occurrence of jaundice of this sort appears to be lessened, it may be assumed that in the absence of the spleen the blood cells undergo disintegration elsewhere. Their pigment could thus reach the liver indirectly only through the general circulation. Traveling in this way, the free hemoglobin would tend to reach the liver much more gradually and at a rate which will lie within the capacity of the hepatic organ for complete excretion as bile pigment; hence no return of the latter into the circulation would occur, and jaundice would fail to develop.

The foregoing hypothesis, of course, is not the only one which is suggested in explanation of the lessened tendency to the hemolytic jaundice after splenectomy. It may be assumed that some peculiar function of blood cell destruction resides in the spleen, and is consequently lost with the removal of this organ. As a matter of fact, hemolytic agents produce disintegration of erythrocytes even in splenectomized animals, though the effect is a distinctly lessened one. These circumstances have led a group of investigators, in the department of research medicine at the University of Pennsylvania, to inquire whether or not the lessened tendency to jaundice after splenectomy is due, in part at least, to a mechanical factor dependent on the relation of the spleen to the blood supply to the liver.

Splenectomy itself has no influence on the fate of hemoglobin injected into the general or portal circulation. Bile pigments are formed from at least a part of it. Austin and Pepper,[2] under experimental conditions in which hemoglobin was introduced into the blood stream, found that the resulting jaundice was distinctly more persistent after mesenteric than after femoral injection. It will be noted that whereas the latter procedure brings the jaundice-provoking substance into the general circulation first, the former path leads directly to the liver. The Philadelphia investigators therefore summarize the outcome as follows: When the hemoglobin is set free in the portal circulation, a larger amount is held by the liver and converted rapidly into bile pigment than is the case when it is set free in the general circulation. Through the direct portal path, overloading of the liver may thus occur more readily, and jaundice is more apt to develop.

The purely mechanical influence of the path of entry to the liver must therefore be a factor in the lessened tendency, after splenectomy, to the jaundice which follows blood destruction by hemolytic agents. As Austin and Pepper further remark, whether the spleen is an active factor in destroying erythrocytes, or whether it plays merely a passive part as a place for the deposition of the disintegrating cells, there can be no question that in this organ, when it is present, a large number of cells undergo their final disintegration after the action of hemolytic poisons, and that the hemoglobin there liberated passes by the portal system directly to the liver. When the spleen is removed, the disintegration occurs in other organs, notably in the lymph nodes and bone marrow; and from these organs the hemoglobin passes not into the portal blood stream but into the general circulation, from which it reaches the liver more gradually and in a more dilute form.

The view here presented is fortified by additional experiments in which the venous drainage of the spleen has been altered without the actual removal of this organ. Krumbhaar, Musser and Peet[3] have diverted the venous outflow to the liver by the ingenious surgical device of either ligating the splenic vein or trans-

1. Compare Pugliese, A., and Luzzatti, T.: Contributo alla fisiologia della milza; milza e veleni ematici, Arch. p. le sc. med., 1900, xxiv, 1. Pugliese, A.: Rate et poisons hématiques, Arch. ital. de biol., 1900, xxxiii, 349; La secrezione e la composizione della bile negli animali smilzati, Policlinico, Sez. med., 1899, vi, 121; La secretion et la composition de la bile chez animaux privés de la rate, Arch. Ital. de biol., 1900, xxxiii, 359.

2. Austin, J. H., and Pepper, O. H. P.: The Relation of the Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice, XII, The Importance in the Production of Hemolytic Jaundice of the Path of Hemoglobin to the Liver, Jour. Exper. Med., 1915, xxii, 675.

3. Krumbhaar, E. B.: Musser, J. H., Jr., and Peet, M. M.: The Relation of the Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice, XIV, Changes in the Blood Following Diversion of the Splenic Blood from the Liver, A Control Study of the Effects of Splenectomy, Jour. Exper. Med., 1916, xxiii, 87. Krumbhaar, E. B., and Musser, J. H., Jr.: The Relation of the Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice, XV, The Resistance to Hemolytic Agents of Dogs in Which the Splenic Blood has been Diverted from the Liver, ibid., p. 97.

planting it into the vena cava, instead of removing the spleen. Obviously, if the removal of the spleen as an organ furnishing some chemical hormone, is responsible for the effects of splenectomy on jaundice, the usual results obtained with hemolytic agents should not follow when the spleen is left intact in the way described. But the animals with transplanted splenic circulation actually show a lessened tendency to jaundice, similar to that exhibited after simple splenectomy. This experience thus serves to confirm the probability that the altered course of the blood supply to the liver plays a part in the phenomena discussed.

THE NONPROTEIN NITROGENOUS COMPONENTS OF THE BLOOD

If the routine detailed analysis of the blood is to prove of value in the future in the field of diagnosis, as urinary analysis has demonstrated its usefulness in the past, it will be necessary to have elaborate fundamental studies of the normal composition of the circulating fluid and its variations under known conditions of physiologic disturbance. Data obtained from this standpoint in respect to the sugar content of the blood have repeatedly been discussed in THE JOURNAL.[1] Since the introduction of suitable micromethods of analysis, the quantitative aspects of the nonprotein nitrogen of the blood — the index of that fraction of its constituents which includes the circulating amino acids, urea and other products of metabolism — have claimed special attention. The technic of the estimations is beginning to share a place in the larger clinical laboratories and is receiving application in particular in the investigation of renal function.

An elaborate investigation of the nonprotein nitrogen of the blood recently published by Bang[2] of Lund, Sweden, has brought a confirmation of some of the earlier chemical statistics of the blood as well as an addition to the known facts. Thus the average figure for the total nonprotein nitrogen is placed, as the result of numerous new analyses, at 25 mg. per hundred gm. of blood; out of this an average of 15 mg. is apportioned to urea. These values correspond fairly closely with those first established in this country for man by Folin and Denis.[3] The latter found results varying between the narrow ranges of from 22 to 26 mg. for total nonprotein nitrogen and from 11 to 13 mg. for urea nitrogen, which lead them to conclude that the perfectly normal kidney maintains a remarkably constant level of these components in the blood.

It has been demonstrated that both amino acids and urea, representing food and waste, respectively, from the standpoint of nitrogenous metabolism, occur in the corpuscles as well as in the plasma of the blood,[4] the formed elements being permeable to such compounds. An analogous behavior is known in the case of the blood sugar. According to the newest analyses of Bang, both the corpuscles and the plasma of human blood as a rule contain practically the same content of total residual nitrogen, urea and amino acids. In several instances Bang has observed an increase in the urea content of the blood without any comparable change in the other nonprotein nitrogenous constituents during starvation. This was demonstrated, however, to be associated with a lack of water, and disappeared as soon as a suitable intake of water was assured. The ingestion of protein did not lead, in Bang's experience, to any noteworthy concentration of amino acids in the blood unless the intake was inordinately large. Evidently a renal loss of amino acids is thus averted so long as the blood content does not rise to an excretion level. The urea content may be decidedly increased, however, thus showing the speedy conversion of amino acid nitrogen into its characteristic end-product of nitrogenous waste. The center of interest in reactions of nitrogenous metabolism is for the time shifting to the study of the chemistry of the blood.

NEW RESEARCHES ON THE BILE

Recent progress in our knowledge of the physiology of alimentation has been characterized in particular by a better insight into the mechanism of the secretion of the digestive glands. For more or less obvious reasons, the production and properties of the gastric juice have experienced the greatest elucidation. Pawlow's epoch-making observations have been followed by numerous others that help to make clear the functions of the various digestive secretions and the activities of the secretory apparatus which produces them.

Much has been written about the physiology of the bile; but the literature of the subject still abounds in contradictory statements involving some of its fundamental features. There is, accordingly, a peculiar and timely appropriateness to a renewed investigation of the problems of the bile and biliary secretion such as has lately been undertaken in the Institute of Physiology at University College, London.[5] Under Starling's leadership it has been shown, contrary to widespread statements, that there is little difference in the

1. Dietary Treatment and the Sugar Content of the Blood in Diabetes, editorial, THE JOURNAL A. M. A., Aug. 22, 1914, p. 688; The Absolute and Percentile Amounts of Sugar in the Blood, Sept. 19, 1914, p. 1036; The Normal Blood Sugar Content, Sept. 11, 1915, p. 958; The Pancreas and Sugar in the Blood, Oct. 2, 1915, p. 1187.

2. Bang, I.: Untersuchungen über den Reststickstoff des Blutes, I, Biochem. Ztschr., 1915, lxxii, 104; II, ibid., p. 119; III, ibid., p. 129; IV, ibid., p. 139; V, ibid., p. 146.

3. Folin, O., and Denis, W.: Protein Metabolism from the Standpoint of Blood and Tissue Analysis, VI, On Uric Acid, Urea and Total Non-Protein Nitrogen in Human Blood, Jour. Biol. Chem., 1913, xiv, 29.

4. Costantino, A.: Untersuchungen über die biologische Bedeutung und den Metabolismus der Eiweissstoffe, VII, Der durch Formol titrierbare Aminosäurenstickstoff im Blutserum und in den Blutkörperchen von verschiedenen Tieren, Biochem. Ztschr., 1913, li, 91; II, Der durch Formol titrierbare Aminosäurestickstoff in den Blutkörperchen und im Serum des Blutes von hungernden und ernährten Tieren, ibid., 1913, lv, 402; III, Die Permeabilität der Blutkörperchen für Aminosäuren, ibid., p. 411.

5. Okada, S.: On the Secretion of Bile, Jour. Physiol., 1915, xlix, 457; On the Contractile Movement of the Gall Bladder, ibid., 1915, L, 42; On the Reaction of the Bile, ibid., 1915, L, 114.

effects, on the secretion of bile during the first six or seven hours after meals, between the diets of bread, butter and meat, if these substances are administered in quantities of corresponding caloric value. In the case of bread the diminution in secretion occurs sooner than in the case of butter or meat. Starvation tends to diminish the secretion of bile and the excitatory effect of feeding on the liver cells.

Precisely as special food products are now well known to have a specific effect on gastric secretion, so that meat extractives and dextrins, for example, increase the flow quite pronouncedly and can accordingly be employed in therapeutic ways, certain products also affect the biliary secretion. Of white of egg, fats and oils, acids, "peptones," extract of meat, and bile salts or bile, all produce an increased secretion of a more dilute bile, with the exception of bile and bile salts, which produce a bile lighter in color but with a larger percentage of solids. Among the substances eaten or introduced into the stomach, on the other hand, producing little or no effect are water, sucrose, cakes of starch and sugar, and sodium bicarbonate. As in the case of the pancreas, so with the liver, secretin which finds its way into the circulation promotes the activity of the gland involved, causing in this case the secretion of a more dilute bile. Familiar facts in relation to hematogenous jaundice make us ready to understand that injection of the blood pigment hemoglobin into the blood stream increases the pigments of the bile without marked change in the amount. This is quite in harmony with the current view that the biliary pigments function as excretory products of hemoglobin.

The therapeutic agents capable of promoting the flow of bile are still a subject of controversy. About the potency of bile itself as a cholagogue there is no question. When fed, as noted above, it causes an unmistakable increase in the secretion. Okada[5] has arrived at the conclusion that calomel — the much vaunted drug for biliousness, whatever that may mean — is without effect on biliary secretion, thus confirming other earlier evidence of the same sort. Sodium salicylate and chloral hydrate are reported to provoke biliary flow markedly; phenyl salicylate (salol), cream of tartar, and alcohol in large doses are likewise reported to be distinct stimulants; atropin causes a slight diminution of secretion.

When a meal is taken, the ejection of the chyme into the duodenum is followed by an ejection of bile as the result of contractions of the gallbladder. According to Okada's newest observations, during digestion there is an increase in the force of the rhythmic contractions of the gallbladder.

The reaction of the different alimentary secretions is a matter of considerable physiologic significance; and about this aspect of the bile, also, the statements are anything but concordant. The older methods of estimating the reaction have given way to the more exact procedure of determining true acidity or alkalinity in terms of hydrogen ion concentration. It is now evident that the reaction of the bile from the gallbladder and from the liver is different; the reaction of the former is more variable and always inclining more to the acid side than that of the latter.[6] Okada has pointed out that the facts that bile, in so many animals, is poured into the intestine by an orifice common to it and the pancreatic juice, and that these two fluids cooperate in their actions on the ingested foodstuffs, suggest that they must have a reaction which is optimal for their action in the processes of digestion. As a matter of fact, the reaction of bile from the liver is alkaline during digestion and corresponds to that of pancreatic and intestinal juices and with the optimal point for trypsin, pancreatic lipase and erepsin.

THE CAUSE OF TYPHUS FEVER

Much progress has been made in recent years in solving the problem of the cause of typhus fever. Perhaps the most important demonstration from a practical point of view is the discovery by Nicolle, Ricketts and others that the disease is transmitted by the body louse. The demonstration also that apes, monkeys and guinea-pigs are susceptible to the typhus virus makes it possible to conduct systematic experiments on animals, and in the course of such experiments it has been shown quite conclusively that the disease is not caused by a filterable virus as we ordinarily understand it. And so the search for a bacterial cause has continued.

In 1914, Plotz described a gram-positive anaerobic bacillus obtained in culture of the blood from patients with endemic typhus in New York and of typhus fever in immigrants in quarantine. The medium consisted of glucose agar and unheated, unfiltered ascitic fluid with a specific gravity of about 1.015. Subsequently the same bacillus was recovered from guinea-pigs and monkeys inoculated with typhus blood, and specific agglutination and complement fixation obtained with the blood typhus patients after the crisis. The evidence is consequently strongly in favor of at least some close relationship between this bacillus — the *Bacillus typhi-exanthematici* — and typhus fever; it can hardly be asserted, however, that it has been demonstrated conclusively to be the specific cause of typhus fever. It is not apparent that injections of this bacillus in animals give rise to the same reactions which occur after the injection of typhus blood; of course it must be acknowledged that failure to produce reaction and failure to protect animals against the virus in typhus blood do not necessarily imply that the bacillus is not the cause of typhus, but they make the demonstration of the true relation of this bacillus to typhus fever difficult.

6. Okada, S.: On the Reaction of Bile, Jour. Physiol., 1915, L, 117.

The extensive outbreaks of typhus in European countries involved in the war, especially Serbia, would seem to offer unexcelled opportunity for the further work necessary to settle the etiologic problem of this disease; in spite of the abundance of the material, however, the conditions in war do not seem to be favorable for scientific investigation. Thus we are informed that the American Red Cross Commission found it practically impossible to do systematic work during the last typhus epidemic in Serbia, and the recent work in Mexico by Olitsky[1] and others was interrupted very soon after it had been started. From the latest Mexican work we see that the results again indicate the close relationship between the bacillus of Plotz and typhus, and we may hope that independent workers under favorable conditions will secure results before long of definite significance.

In connection with this work on typhus we note the melancholy fact that another investigator has died from the disease. Carlos E. Husk died, March 20, 1915, from typhus fever contracted in the course of the work mentioned in the foregoing. There is probably no disease that has claimed so many victims among physicians and nurses as typhus. It is said that during twenty-five years, of 1,230 physicians attached to institutions in Ireland, 550 died of typhus. Since the war, again, typhus has claimed many victims from physicians, among them, for instance, Jochmann, who was doing splendid work in the study of infectious diseases. And the martyr roll of typhus now includes three American investigators who have died from typhus contracted while voluntarily investigating the disease in Mexico — Conneff of the Ohio State University expedition, Ricketts, who accomplished so much, and now Husk.

FEVER-PRODUCING SUBSTANCES — PYROGENS

The scientific literature on fever, considered as a pathologic phenomenon quite independent of the ulterior cause, abounds in the rival claims of the so-called toxogenic and neurogenic theories. Virchow, as early as 1853, looked on fever as a neurosis — the condition being considered analogous to a paralytic state, with a failure of the control of some physiologic processes in the organism. This attitude has been attacked particularly on the ground that there is no very definite proof of the existence of special nerves which preside over the production of heat. Accordingly, it has seemed more likely to many students of fever that circulating poisons affect directly all the cells of the body, so that the latter react with a febrile intensification of their metabolism.[2] A peculiar significance was given to the toxogenic theory, particularly with reference to the reported results of the fever-producing effects of extracts of certain tissues and other substances, by the observations of Hort and Penfold[3] in 1911. These showed that when ordinary water, after it is sterilized, is injected intravenously into rabbits, the result is usually a short febrile reaction, whereas the injection of pure sterile water, carefully distilled from glass, fails to produce such a result. This work has in the main been corroborated.

Evidently, then, water may readily be contaminated with micro-organisms which produce some pyrogenic substance which is not destroyed by the heat employed in sterilization. From a practical standpoint this fact has emphasized the necessity of using freshly distilled (as well as sterilized) water for the preparation of fluids for injection. On the theoretical side, moreover, it suggests the existence of relatively stable substances which must require a dosage extremely small at best to produce febrile responses independent of the introduction of living organisms into the body.

In harmony with this are the more recent experiments of Jona[4] at the Lister Institute in London. From *Bacillus coli* he obtained a substance of remarkable potency. On injection in a minimal amount of Ringer's solution, fever or collapse can be produced by it in experimental animals, a dose equivalent to 0.000004 gm. of bacterial bodies producing fever, and 0.002 gm. producing marked collapse or even death. The dosage feature becomes even more striking on contemplation of the fact that the bulk of the weight of the bacteria must be something other than the incidental pyrogenic substance yielded by them. According to Jona, the substance or substances in the bacteria responsible for the rise in temperature are either of a colloidal nature or adherent to colloids, so that they may be almost entirely removed by a collodion filter. They are not destroyed in boiling water or by dry heat of 110 C. (230 F.), and they are insoluble in organic solvents such as alcohol and ether. The rise in temperature ordinarily produced by these products (in rabbits) lasts a few hours, and is principally due to a diminution in heat loss, the heat production remaining sometimes unaffected and sometimes increased.

On the basis of such facts, some of the reputed pyrogenic effects attributed to a variety of substances — proteoses, enzymes, etc. — may perhaps find an explanation in their association with these subtle impurities of bacterial origin. Although Krehl and others have long claimed fever-producing properties for digestion products of ordinary proteins, Gibson[5]

1. Olitsky, P. K.; Denzer, B. S., and Husk, C. E.: The Etiology of Typhus Fever in Mexico (Tabardillo), THE JOURNAL A. M. A., May 27, 1916, p. 1692.

2. An interesting discussion of the subject will be found by MacCallum, W. G.: Fever, the Harvey Lectures, 1908-1909, Philadelphia, 1910, p. 27.

3. Hort, E. C., and Penfold, W. J.: The Dangers of Saline Injections, Brit. Med. Jour., 1911, ii, 1510; A Critical Study of Experimental Fevers, Proc. Roy. Soc. London, 1912 (B), lxxxv, 174; The Pyrogenetic Properties of B. Typhosus, Brit. Med. Jour., 1912, ii, 1300. Fevers Following Subcutaneous Injections, editorial, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2156.

4. Jona, J. L.: A Contribution to the Experimental Study of Fever, Jour. Hyg., 1916, xv, 169.

5. Gibson, R. B.: Proteoses and Fever, Philippine Jour. Sc. (P), 1914, viii, 475.

has shown that only slight, if any, pyrogenic effects are produced with carefully purified proteoses. He concludes, therefore, that any rise in temperature which may have been observed is insufficient to warrant the opinion that proteoses cause the severe natural fevers. If we are dealing with impurities in such reputed cases of fever-producing products, it is nevertheless possible, according to Jona, that in cases of burns to the body, substances of a nature similar to the bacterial "pyrogen" are set free and may give rise to the fever seen in milder cases as well as the collapse in the severer ones. All suggestions of this character contribute to the probability of toxogenic factors which deserve wider consideration in the speculations of the future on the subject of febrile reactions.

Current Comment

NONSPECIFIC FACTORS IN THE TREATMENT OF DISEASE

There is a growing interest in the scientific investigation of the nonspecific elements in recovery from infectious disease, and a close examination of clinical facts suggests that some of the therapeutic effects which have been attributed to action, specific in the sense of Ehrlich, may have resulted from physicochemical changes of a less specific and more general nature. Jobling and Petersen[1] review the evidence, both clinical and laboratory, which points to the importance of nonspecific elements in biologic therapeutic reaction, and suggest that in the past we have adhered perhaps too closely to the narrow view of specificity, and have refused to consider evidence of nonspecific therapeutic results, particularly if such observations originate from clinical sources. They then discuss some of the ways in which nonspecific effects become evident clinically by hyperpyrexia, by leukocytosis and by laboratory tests for changes in the serum suggesting the mobilization of ferments. While this discussion is timely, a word of caution may not be amiss. While it is probable that much important information will come out of this line of investigation, our present information is meager, and we must not at once cast aside all of our conceptions of specificity in disease, for it is under the guidance of these conceptions that we have made progress up to the present time. Nor does it seem wise to accept clinical evidence alone as conclusive, unless confirmed by many observers under varying conditions. Miller and Lusk,[2] in a paper dealing with one phase of such nonspecific therapy, report improvement lasting as long as five weeks in patients suffering from arthritis, following intravenous injections of typhoid vaccine. These observations afford an example of what appears to be a favorable nonspecific therapeutic action of foreign protein. It would be of interest, however, to know how permanent the improvement in these patients was, and in how many the cause of the arthritis was found and removed. Finally, we must bear in mind the query propounded by Theobald Smith in another connection: How much energy does a reaction of this sort cost the patient, and is the final result worth the cost?

1. Jobling, J. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, THE JOURNAL A. M. A., this issue, p. 1754.
2. Miller, J. L., and Lusk, F. B.: The Treatment of Arthritis by the Intravenous Injection of Foreign Protein, THE JOURNAL, this issue, p. 1756.

MINERS' NYSTAGMUS

In view of the enactment of the workmen's compensation laws in more than thirty states, miners' nystagmus may at any moment become of immediate interest. No investigation has been made in the United States (except in Illinois) as to the existence of this disease; still less has a thorough survey been undertaken. The Bureau of Mines has recently published a monograph by Frederick L. Hoffman[1] in which are reviewed the various opinions as to the causation and prevention of nystagmus. It is estimated that, if cases of nystagmus occurred in American mines to the same degree as they do in Europe, there should be a number of cases each year which may be estimated as between 25,000 and 40,000. It would seem improbable that such a large number could escape notice; but experience in Europe has shown that very little attention is paid to the disease until it becomes a question of compensation. The conditions to which the occurrence of nystagmus are generally attributed are rare in this country. These are hand undercutting, the working of extremely narrow seams, and entire dependence on the feeble light of the miners' lamp. But it must be remembered that, according to Elworthy, the true determining cause is total absence of color in coal mines, combined with the fact that the majority of miners prefer to work in daytime, so that they have very little opportunity for relief of the retina. This view is to a certain extent supported by the absence of nystagmus in miners working in mines other than coal mines under conditions which should produce nystagmus, except that the monotonous blackness is absent. In this respect, it would be interesting to know what is the condition as to nystagmus of the miners of Mansfeld, whose copper seams are notoriously the thinnest in the world, and who work in inconceivably cramped quarters.

1. Hoffman, Frederick L.: Bulletin 93, Bureau of Mines.

GOA POWDER AND CHRYSAROBIN

Among the drugs which have increased in price since the outbreak of the war in Europe is chrysarobin, which, formerly about $3 a pound, wholesale, is now, when quoted at all, held at $6.75 a pound.[2] Chrysarobin, widely used in psoriasis, is manufactured from goa or araroba powder, which is said to come entirely from the American continent — from the state of Bahia, Brazil. According to a report by Consul Robert Frazer, Jr.,[3] this substance is found in the form of a pulp or small solid masses, supposed to constitute a morbid growth, in crevices of the heart wood of a leguminous tree known locally as *amargoso do matto*

2. Red Book Price Lists of Druggists Circular, 1914 and 1915, and price lists of Mallinckrodt and Powers-Weightman-Rosengarten.
3. Frazer, Robert, Jr.: Commerce Reports, May 12, 1916, p. 568.

(*Vouacapoua* or *Andira araroba*). The yield sometimes amounts to 60 or 65 pounds a tree. The trees are not cultivated, but grow abundantly in the forests, attaining great size. To obtain the powder, the full-grown trees are felled and split, and the araroba deposits removed, dried and powdered. The product yields about 50 per cent. of chrysarobin. Goa powder is dangerous to handle; Frazer says that those who work with it for any length of time, even though protected by gloves and masks with glass eyepieces, invariably lose hair, eyebrows and eyelashes, and sometimes become blind. Just before the war broke out, large shipments of the powder were made to Europe. According to Frazer, ample supplies are now obtainable.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Successful Campaign for Society.—The Denver and County Medical Society started, May 22, to raise $5,000 to furnish and equip its new meeting hall and library in the building now being erected for it. By May 29 it had raised $5,200 for this purpose.

CONNECTICUT

Personal.—Dr. Edward J. Lynch, Norwich, has been appointed superintendent of the sanatorium at Shelton, succeeding Dr. William M. Stockwell, transferred to the Hartford Institution; Dr. James P. McManus, Stamford, of the Shelton Sanatorium has been appointed assistant at the Hartford Sanatorium; and Dr. William C. Schroeder, assistant at the Hartford Institute, has been transferred to the Norwich Sanatorium.——Dr. Simon R. Klein, Norwich, has been appointed pathologist to the Arkansas State Hospital, Little Rock.

New State Society Officers.—The one hundred and twenty-fourth annual meeting of the Connecticut State Medical Society was held in Bridgeport, May 17 and 18, under the presidency of Dr. Max Mailhouse, New Haven, whose presidential address was on the subject of "Some Defects and Inconsistencies in Connecticut Statutes and Medicolegal Proceedings." Dr. David L. Edsall, professor of clinical medicine in Harvard University, delivered, by invitation, an address on "The Clinical Study of Respiration." The following officers were elected: president, Dr. Samuel M. Garlick, Bridgeport; vice presidents, Drs. George M. Burroughs, Danielson, and John C. Kendall, Norfolk; secretary, Dr. Marvin M. Scarbrough, New Haven (reelected); treasurer, Dr. Phineas H. Ingalls, Hartford (reelected). The next meeting will be held in New Haven, May 23 and 24, 1917.

DELAWARE

New Health Boards.—Dover has selected the following physicians as members of its board of health: Drs. L. August H. Bishop and Edwin S. Anderson, and at the meeting of the board for organization, Dr. Bishop was elected president and Dr. Anderson, vice president.——Dr. Silas C. Frederick and Dr. Harry M. Frist have been appointed members of the Wilmington Board of Health.

Epidemics in Delaware.—The Seaford Board of Health, in cooperation with the town council, has established a quarantine against Laurel, where there are said to be six cases of smallpox.——Wilmington, after a protracted siege, has apparently conquered the epidemic of smallpox which has persisted for about six weeks, and the public schools, churches and places of amusement have been reopened.——The epidemic of measles at Wilmington has been checked after 749 cases had been reported.

ILLINOIS

State Leprosarium.—The state board of administration announced, May 22, the establishment of the Illinois Leprosarium on the grounds of the Watertown Hospital. The institution has already two occupants.

Practitioners' Club Election.—At the meeting of the Elgin Practitioners' Club, May 15, Dr. Harry E. Kerch, Dundee, was elected president; Dr. Howard T. Knight, Jr., Elgin, secretary-treasurer, and Dr. Howard K. Scatliff, Elgin, chairman of the executive committee.

Ambulance Company at State University.—An ambulance company of the Illinois National Guard is to be organized in Urbana-Champaign, with headquarters at the University of Illinois, between the two cities. Dr. John C. Dallenbach, Champaign, is in charge of the project.

Survey of Subnormal Projected.—A survey of Illinois on the question of subnormality is to begin in a few days under the auspices of the Illinois Society for Mental Hygiene. Chicago will be the center of the work, and it is expected that a year will be spent in gathering data on this question. Dr. Sydney Kuh, Chicago, and Dr. Sidney Wilgus, Rockford, are members of the committee which has the matter in charge.

New Hospital.—Plans for the erection and endowment of a hospital in Highland Park have been completed, and June 8 has been selected as the date of launching the four-day campaign to raise a fund of $100,000 by popular subscriptions among residents of Highland Park, Highwood, Deerfield and a portion of Ravinia. Dr. Lloyd M. Bergen is chairman of the executive committee, and Drs. Henry S. Haskin, Harry B. Roberts and Albert R. Sheldon are medical members of the committee.

Personal.—Dr. and Mrs. Archie B. Atchison, Oregon, and family have returned after two years spent in Alabama.——Dr. Morris Finkelberg, Spring Valley, was seriously injured, May 23, when his motor car plunged down a 35-foot embankment. He suffered a comminuted fracture of the inferior maxilla and concussion of the brain, and is under treatment in St. Margaret's Hospital.——Dr. Herbert B. Henkel, Springfield, has been elected president of the County Secretaries' Association.——Dr. David B. Penniman, Rockford, who has been a patient at the Rockford Hospital for several weeks, has returned home, greatly improved.

Indicted on Diploma Mill Charge.—It is reported that, April 24, at Chicago, two indictments were voted by the April grand jury in connection with an investigation of an alleged "diploma mill." Drs. Amante Rongetti, Gastano Ronga and Amos de Feo were charged in one indictment with conspiracy to aid August Steinlage and Vincenzo Scaletta in qualifying falsely for examination by the Illinois State Board of Health, having sold them diplomas, it is said, which were stolen. The other indictment alleged the operation of a confidence game. In this instance Joseph Glaser, son of a Chicago physician, was jointly indicted with Drs. Rongetti and Ronga.

Chicago

Medical Staff at Republican Convention.—Commissioner of Health Robertson announces that fifty physicians will be on duty with the Emergency Hospital staff at the Coliseum during the Republican Convention.

Physician for Court of Domestic Relations.—Acting on a request from Judge Newcomer of the municipal court, Health Commissioner Robertson has assigned a physician for duty in the court of domestic relations, where each day from twenty to forty infants are present, many of whom are suffering from communicable or other diseases. The physician's duty will be to take up, with the mothers, the health of the children and advise the mothers how to proceed.

Personal.—Dr. James F. Churchill announces his removal to San Diego, Calif.——May 25, a banquet was tendered Dr. John McLean, for thirty-five years a physician of Pullman, at the Hotel Florence in that suburb. The banquet was given under the auspices of the Calumet Branch of the Chicago Medical Society.——Dr. Orville W. McMichael was the guest of the evening at the first meeting of the advisory staff of the Rockford Sanitarium, May 22, and described certain phases in the diagnosis and treatment of tuberculosis.——Dr. Charles Davison read a paper before the Wayne County (Mich.) Medical Society, Detroit, May 22, on "Bone Transplanting in Fractures."——Dr. Nelson M. Percy, Chicago, delivered an address on "Surgery Management of Pernicious Anemia" before the Kalamazoo Academy of Medi-

cine, May 23.——Dr. William A. Evans delivered an address before the White County Medical Society, May 17, and in the afternoon addressed a public meeting regarding health conditions in White County.

LOUISIANA

Move Against Illegal Practice.—The State Board of Medical Examiners, April 19 and May 1, respectively, filed petitions asking for injunctions to prohibit F. H. Seeley, a truss "expert," and Dr. M. M. Odom, McDonoghville, from further practicing medicine in Louisiana.

Report on Midwifery.—The State Board of Medical Examiners has recently made an extensive study of the midwifery problem. The report states that "midwives attended approximately 50 per cent. of the births in this country," nevertheless the investigations prove that "with few exceptions the midwife is dirty, ignorant and totally unfit to discharge the duties which she assumes." Reports show they are practicing in all states, mostly among immigrants and negro women. The board concludes that the first thing necessary is to insist on their being better trained, and a school for them has been opened in New Orleans.

MARYLAND

Fund for Johns Hopkins Training School.—A campaign has been started among the alumnae of the Johns Hopkins Training School for Nurses to help raise an endowment fund of $500,000. More than $1,700 was raised at the annual meeting of the alumnae of the training school, and $8,000 had already been pledged to this fund, making the total $9,700.

Legal Recognition of National Board.—What appears to be the first legislative action giving recognition to the National Board of Medical Examiners appears in an amendment secured recently to the medical practice act of Maryland. This amendment provides for the licensing without examination of applicants who present certificates issued by the national board.

Personal.—Dr. Howard A. Kelly will sever his connection at the Johns Hopkins Hospital for a year, in order to devote all of his time to further research work in radium.——Dr. Thomas S. Cullen will be in charge of Dr. Kelly's classes in the gynecologic department.——Dr. Martin F. Sloan, superintendent of the Eudowood Sanitarium, Towson, has opened offices in Baltimore for the private practice of medicine. He will limit his practice to diseases of the chest.——Dr. Frederick Williams has been appointed health warden of the fourth ward of Baltimore, succeeding Dr. John F. Byrne, resigned.

MASSACHUSETTS

Cornerstone Laid.—The cornerstone of the new Winchester Hospital was laid recently with impressive ceremonies by Governor McCall. During the exercises it was announced that a gift of $50,000 had been received from George Harrington, a resident of Winchester, the hospital association to have the interest on that sum for two years and if, at the expiration of that time, the mortgage of $15,000 has been paid off, the principal will be turned over to the association. The building will contain two wards with eight patients each, private rooms and operating and maternity departments and, equipped, will cost about $67,000.

Personal.—Dr. Howard S. Holloway, Boston, announces that his reported appointment as bacteriologist of the state board of health of Alabama was an error.——Dr. Lewis M. Palmer, Framingham, has been appointed medical examiner, that is, coroner of Middlesex County.——Dr. Allen Greenwood, Boston, who was a member of the First Harvard Unit to serve in the war zone, has returned to Europe as a member of the Third Harvard Unit.——Drs. John W. Lane, Michael J. Cronin, Thomas F. Greene, Andrew F. Downing and Herbert L. C. Johnson have resigned as members of the staff of St. Elizabeth's Hospital, Brighton, Boston.

MISSOURI

New Arrangements of Health Department.—Dr. Paul Paquin, health commissioner of Kansas City, announces that a new department of hygiene is to be built up, dividing the city into seventeen districts, over each of which will be placed a sanitary officer, who will have charge of all details of sanitary inspection in his district.

Mental Hygiene Society Organized.—The Missouri Society for Mental Hygiene was organized in St. Louis, May 24. Missouri is the fifteenth state to organize such a society in affiliation with the National Committee for Mental Hygiene. Mr. Clifford W. Beers, secretary of the national committee, was present to facilitate the organizing. A committee was appointed to proceed with the completion of the organization, with Dr. Malcolm A. Bliss, St. Louis, as chairman, and Dr. Francis M. Barnes, Jr., St. Louis, as secretary-treasurer. This society will work along the lines similar to those followed by the National Committee for Mental Hygiene and other state societies for the prevention of mental diseases and betterment of the present conditions of care and treatment of the insane and feebleminded in Missouri.

St. Louis

Memorial for Dr. Jesse S. Myer.—The friends of the late Dr. Jesse S. Myer have raised a fund to establish a memorial for Dr. Myer in the library of the St. Louis University Medical School, in celebration of his graduation twenty years ago. The fund now amounts to $1,181. Contributions may be sent to Dr. Hanau W. Loeb, 1402 South Grand Avenue.

Personal.—Dr. Fred T. Murphy of the department of surgery of Washington University Medical School has returned from France, where he served in the American Ambulance since February.——Dr. Philip A. Shafer, dean of the Medical School of Washington University, has been elected secretary of the American Association of University Professors.

Workmen's Compensation Law.—Dr. Robert M. Funkhouser has been appointed a member of the executive committee having in charge the work of drafting a Workmen's Compensation Law for Missouri. Dr. Funkhouser will represent the Missouri State Medical Association. The other members of the committee are Alroy S. Philips, from the Bar Association; W. C. Essemueller, representing the employers; Reuben T. Wood, representing the employees, and E. B. Thompson, representing insurance companies.

Washington University Items.—The Washington University Corporation announces an anonymous gift providing for a research fellowship in surgery for 1916. This fellowship has been awarded to Dr. Philip R. Green of the class of 1914.——Dr. Philip C. Jeans has been promoted from instructor to associate in medicine; Dr. Howard H. Bell from assistant to instructor in pathology; Dr. Charles H. Danforth from associate to associate professor of anatomy; Dr. Edwin A. Baumgartner from instructor to associate in anatomy; Dr. Louis H. Hempelmann from assistant to instructor in medicine; Drs. Theodore C. Hempelmann and Adrien S. Bleyer from assistants to instructors in pediatrics; Dr. Maurice Flexner has been appointed assistant in medicine; Dr. Oscar F. Bradford, assistant in pathology and resident pathologist, and Drs. Herbert V. Wiehrauch and William T. Wilkening, assistant residents.

NEBRASKA

Change in State Hospital Staff.—Dr. William A. Danielson, Stromsburg, has been appointed third assistant physician at the Hastings State Hospital, succeeding Dr. Grover C. Rice, Doniphan.

New State Society Officers.—The forty-eighth annual meeting of the Nebraska State Medical Association was held in Omaha, May 23 to 25, under the presidency of Dr. Edward W. Rowe, Lincoln. At the annual banquet Dr. James B. Herrick, Chicago, delivered an address on "Clinical Studies of Angina Pectoris." Lincoln was selected as the place of meeting for next year and the following officers were elected: president, Dr. William F. Milroy, Omaha; vice presidents, Drs. Miles S. Moore, Gothenberg, and John I. McGirr, Beatrice; secretary, Dr. Joseph M. Aikin, Omaha (reelected); treasurer, Dr. Alexander S. von Mansfelde, Ashland; corresponding secretary and librarian, Dr. William P. Wherry, Omaha (reelected). The association has its own official journal, of which Dr. Irving D. Cutter is editor and Dr. Joseph M. Aikin, Omaha, business manager.

NEW YORK

Personal.—Dr. Freeman S. O'Brien, Wappingers Falls, who disappeared on the eve of his marriage, was found, May 21, in a New York hospital suffering from concussion of the brain due to an automobile accident.——Dr. Edward Torrey, president of the Olean Board of Health, has resigned.

Health Officers Association.—At the annual meeting of the Health Officers School Association held in Syracuse, May 12, Dr. Albert L. Hall, Fulton, was elected president; Dr. Francis W. St. John, Weedsport, vice president; Dr. Willis

G. Babcock, Cleveland, secretary, and Dr. Le Roy F. Hollis, Lacona, treasurer.

Dispensary Cornerstone Laid.—The cornerstone of the Baden Street Dispensary, Rochester, was laid, May 15. Addresses were made by Dr. William Kirk, Jr., of the United Charities, and Dr. George W. Goler, city health officer. The occasion also celebrated the fifteenth anniversary of the founding of the Baden Street Social Settlement.

Annual Conference of Sanitary Officers.—This conference will be held in Saratoga Springs, June 6 to 8. The meeting will be devoted wholly to matters affecting the routine work of the health officer and opportunity will be given for the health officers to discuss their problems with the sanitary supervisors and various members of the department staff of the Albany office.

Alumni Meeting.—The Alumni Association of the Medical Department of the University of Buffalo held its forty-eighth annual meeting, May 30 to June 2, under the presidency of Dr. Lesser Kauffman, Buffalo. Dr. Milton J. Rosenau of Harvard University delivered the Harrington lectures, the first two on "Anaphylaxis," and the third on "Educational Public Health Service as a Career." The annual alumni oration was delivered, May 31, by Dr. Charles D. Aaron, Detroit, on "Chronic Intestinal Stasis from the Viewpoint of the Internist." June 1, the memorial portrait of the late Dr. Roswell Park, professor of surgery in the university, was unveiled. In the evening the annual alumni dinner was held at which toasts were responded to by President Rush Rhees of the University of Rochester, Herbert P. Bissell and Dean McKee.

New Officers for State Society.—At the one hundred and tenth annual meeting of the Medical Society of the State of New York held in Saratoga Springs, May 16, under the presidency of Dr. William Stanton Gleason, Newburgh, the following officers were elected: president, Dr. Martin B. Tinker, Ithaca; vice presidents, Drs. Henry L. Winter, Cornwall; J. Richard Kevin, Brooklyn, and Montgomery E. Leary, Rochester; secretary, Dr. Floyd M. Crandall, New York; assistant secretary, Dr. Albert E. Sellenings, New York; treasurer, Dr. Alexander Lambert, New York (reelected); assistant treasurer, Dr. Harlow Brooks, New York, and delegate to the American Medical Association, Dwight H. Murray, Syracuse. President William S. Gleason in his annual address emphasized the need of preparedness and noted that, in the tentative plans drawn up for enactment by Congress, no attempt has been made to provide the increased military force with adequate medical attendance.

New York City

New Post-Graduate Hospital Building.—A gift of $100,000 from Mrs. Alfred G. Vanderbilt will make possible an addition to the Post-Graduate Hospital buildings. The new structure will cover a twenty-foot plot adjoining the present hospital building, and will be equipped as a babies' ward. This structure will be five stories in height.

Babies Welfare Association Meets.—This association, which is a clearing house for all the infant welfare societies in the city, held its annual meeting at The New York Academy of Medicine recently. The program included an address by Dr. Henry L. K. Shaw of the state department of health, Albany, in which he compared the problems connected with infant welfare work in rural and urban communities. The annual report of this association showed that there had been active cooperation among 100 organizations during the year, and that more than 8,000 cases had been handled during the central office. The officers chosen for the following year are: honorary president, Mrs. Henry Villard; president, Dr. S. Josephine Baker; secretary, Dr. Reuel A. Benson, and treasurer, Mrs. Richard Irvin.

Personal.—Dr. Henry H. M. Lyle has returned to France where he will remain for a short time in Paris in connection with the work of the French Commission for the furnishing of artificial limbs for the French wounded. He will then go to the front where he will take the position of chief surgeon of the de Annel-Annel Hospital, Oise.——Dr. H. Sheridan Baketel of Brooklyn has been elected professor of preventive medicine and hygiene in the Long Island College Hospital, to succeed the late Dr. Joseph H. Raymond.——Dr. and Mrs. Frederick Kammerer have returned from Scandinavia.——Dr. Clarence A. McWilliams, who has recently returned from service in the war hospitals of France, gave an account of his experiences liberally illustrated by lantern slides before the Medical Society of the County of New York at its meeting, May 24.

OHIO

Sanitary Study of Youngstown Begins.—Surg. Carroll Fox, U. S. P. H. S., arrived in Youngstown, May 16, to inaugurate a survey of local sanitary conditions, working in cooperation with the public health committee appointed by the chamber of commerce, of which Dr. Sidney M. McCurdy is chairman.

Personal.—Dr. John W. Kannel, Bucyrus, has left that city for Nevada County, Calif.——Dr. Edwin A. Hamilton, Columbus, who has been with the American Red Cross unit in Germany, has returned, and delivered an address on "Hospital Experiences" at a meeting of the Wyandot County Medical Society at Upper Sandusky, May 10.——Dr. George W. Crile, Cleveland, gave a talk before the Alumni of Creighton Medical College in Omaha, April 24.——Dr. Jacob A. Sargis, formerly of Columbus but more recently in Persia, has returned to the United States and is visiting in Columbus.

State Society Meeting.—The seventy-first annual meeting of the Ohio State Medical Association was held in Cleveland, May 17 to 19, under the presidency of Dr. William E. Lower, Cleveland, who, in his address, lamented the passing of the country doctor. Springfield was named as the place for the 1917 meeting, and the following officers were elected: president, Dr. Harmon B. Gibbon, Tiffin; president-elect, Dr. E. Otis Smith, Cincinnati; secretary-treasurer and delegate to the American Medical Association, Dr. Clarence D. Selby, Toledo (reelected); executive secretary, George V. Sheridan, Columbus (reelected); delegate to the American Medical Association, Dr. Benjamin R. McClellan, Xenia; councilors, first district, Dr. Robert Carothers, Cincinnati; third district, Dr. William B. Van Note, Lima; fifth district, Dr. Milton J. Lichty, Cleveland; seventh district, Dr. James S. McClellan, Bellaire; ninth district, Dr. Joseph S. Rardin, Portsmouth, and eighth district, Dr. Henson M. Hazelton, Lancaster, succeeding Dr. William E. Wright, Newark, resigned. The newly created committee for medical defense consists of Dr. Jacob E. Tuckerman, Cleveland; Willard J. Stone, Toledo, and Charles J. Souther, Cincinnati.

Cincinnati

New Officers.—Cincinnati Medical Society, May 5: president, Dr. Cloyce Wilson; vice president, Dr. George Hughes; secretary-treasurer, Dr. Albert J. Nunnamaker.

New Medical College Portrayed.—Dr. Christian R. Holmes gave a lantern demonstration of the new medical college, to be built near the General Hospital, in the pathologic building of the hospital, May 16. The demonstration was given for the benefit of the faculty of the medical school.

Personal.—Dr. Augustus Ravogli was elected president of the American Dermatological Society at its recent meeting in Washington.——Dr. Christian R. Holmes was elected president of the American Otological Society at its annual meeting in Washington, D. C., May 10.——Drs. Arthur E. Koch, Samuel Zielonka and Ralph W. Staley have applied for the position on the junior staff of the General Hospital made vacant by the resignation of Dr. Guy G. Giffin.

OREGON

Alumni Association Meeting.—The fourth annual meeting of the Alumni Association of the University of Oregon will be held in Portland, June 6 to 8. The program includes clinics, scientific sessions and a banquet at the Benson Hotel. The scientific sessions will be held at the Benson. Dr. Ben L. Norden, Portland, is president of the association.

PENNSYLVANIA

Mellon Lecture.—The second Mellon Lecture was delivered at the Mellon Institute, Pittsburgh, May 17, by Dr. Theobald Smith, who is in charge of the Departmenot Animal Pathology of the Rockefeller Institute, Princeton, N. J. His subject was "Clinical Aspects of Naturally Acquired Resistance to Tuberculosis and Their Bearing on Preventive Measures."

Eighteen Maternity Cases Required.—An official communication from the Bureau of Medical Education and Licensure of Pennsylvania states that all candidates graduated after Jan. 1, 1917, who seek licenses to practice medicine in Pennsylvania, will be required to have attended personally not less than twelve maternity cases in their undergraduate medical course. They must also have taken in charge six additional cases during the year's internship in an approved hospital, which is also required.

Personal.—Dr. William J. Crookston, Pittsburgh, who has been a member of the American Red Cross Hospital in Budapest, Hungary, since December, 1914, has returned home after stopping in Russia and Siberia to make inspections of war hospitals and military camps.——Dr. and Mrs. Frank P. Lenahan, Wilkes-Barre, have moved to San Diego, Calif.——Dr. Benneville H. Miller, Mohnton, is ill as the result of a slight cerebral hemorrhage.——Dr. Theodore L. Hazlett, Pittsburgh, who has been serving with the Russian army, is reported to be ill with typhus fever.——Dr. Weir M. Hamilton has been relieved from charge of the Pittsburgh Tuberculosis Hospital and the institution has been placed in charge of Dr. Richard G. Burns.

Philadelphia

Alumnae Meet.—The Alumnae Association of the Women's Medical College of Pennsylvania held its forty-first annual meeting at the College Building, June 1 and 2, under the presidency of Dr. Elizabeth L. Peck. The morning sessions were devoted to business, and the afternoon sessions to scientific papers and discussions. The annual reception and banquet were given on Thursday evening at the Ritz-Carlton.

SOUTH DAKOTA

Hospital Notes.—Dr. Leonora C. Mead is contemplating the construction of a new building at the State Hospital, Yankton.——The Bison Hospital, Lemmon, was destroyed by fire recently.——A new state tuberculosis sanatorium is to be established at Pringle in the Black Hills, which is to be known as the Black Hills Sanatorium.

New State Officers.—At the thirty-fifth annual meeting of the South Dakota State Medical Association held in Aberdeen, May 23 to 25, the following officers were elected: president, Dr. Francis M. Crain, Redfield; vice presidents, Drs. Herman J. G. Koobs, Scotland, and Daniel L. Scanlan, Volga; and secretary-treasurer, Dr. Robert D. Alway, Aberdeen (reelected).

WEST VIRGINIA

West Virginia Physicians Elect.—At the forty-ninth annual meeting of the West Virginia State Medical Association, May 16 to 18, at Wheeling, under the presidency of Dr. Arthur P. Butt Davis, the following officers were elected: president, Dr. Joseph E. Rader, Huntington; vice presidents, Dr. Wade H. Young, Sistersville; Edward H. Thompson, Bluefield, and Reed M. Baird, Wheeling; secretary, Dr. J. Howard Anderson, Marytown (reelected); treasurer, Dr. Hugh G. Nicholson, Charleston; councilors, first district, Dr. James W. McDonald, Fairmont; second district, Dr. Cyrus H. Maxwell, Morgantown; third district, Dr. Morgan T. Morrison, Sutton; fourth district, Dr. Robert H. Pepper, Huntington; fifth district, Dr. Wade H. St. Clair, Bluefield; sixth district, Dr. Peter A. Haley, Charleston; delegate to the American Medical Association, Dr. Chester R. Ogden, Clarksburg, and alternate, Dr. Benjamin B. Wheeler, McKendree. Fairmont was selected as the place of meeting for 1917. The association adopted resolutions setting forth the inadequacy of the existing facilities for tuberculosis patients in the state and advocated that provision be made at the State Tuberculosis Sanatorium for free beds; that wards be provided at the sanatorium for children under 15 years of age; that a state tuberculosis sanatorium for negroes be established; that county officials be prohibited from admitting cases of pulmonary tuberculosis to county almshouses, and that counties be authorized to establish local tuberculosis hospitals for the care of advanced cases.

GENERAL

Salvarsan Received.—A shipment of salvarsan was received in New York from Germany, May 25.

Catholic Hospital Association to Meet.—The Catholic Hospital Association will convene in the auditorium of the Gesu School, Milwaukee, Wis., June 7, for a three-day session.

New Gynecological Officers.—At the annual meeting of the American Gynecological Society held in Washington, D. C., May 9 to 11, under the presidency of Dr. J. Wesley Bovée of that city, Dr. Frank F. Simpson, Pittsburgh, was elected president; Dr. George G. Ward, Jr., New York, secretary, and Dr. Brooke M. Anspach, Philadelphia, treasurer.

Examination Fee Waived.—At a recent meeting of the National Board of Medical Examiners it was determined to waive, for the present at least, the examination fee and to charge each applicant only a nominal registration fee of $5. This will be welcome news to many of those expecting to take the examination, since the expenses without an examination fee are heavy because of railway fare and hotel bills. The first examination, it is stated, will be held in Washington, beginning Oct. 16, 1916. The secretary of the board is Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

Cancer Specialists Elect Officers.—At the annual meeting of the American Society for the Control of Cancer held in New York, May 18, the following officers were elected: president, George C. Clark, New York; vice presidents, Drs. Lewellys F. Barker, Baltimore; Arthur Dean Bevan, Chicago; Lewis S. McMurty, Louisville, Ky., and Edward Reynolds, Boston; secretary, Thomas M. DeBevoise, New York; treasurer, Howard Baine, New York; executive secretary, Curtis E. Lakeman, New York, and directors, Prof. C. E. A. Winslow, New Haven, Conn., and Drs. Charles J. C. O. Hastings, Toronto; Martin F. Engman, St. Louis; Robert B. Greenough, Boston; Joseph Ransohoff, Cincinnati; William D. Haggard, Nashville, Tenn., and Palmer Findley, Omaha.

Bequests and Donations.—The following bequests and donations have recently been announced:

Methodist-Episcopal Hospital, Indianapolis, $2,000, by the will of Mrs. Anna M. Seger.

Country Home for Convalescent Children, Chicago, $13,500, the net receipts of the patriotic war song concert recently given.

Fund for Suffering Jews in the European War zone, up to May 23, $481,000.

Mt. Sinai Hospital, New York, $150,000, for the endowment of a department of abdominal surgery, from Charles A. Wimpfheimer.

St. Luke's Hospital, Chicago, property valued at $2,000, the income to be used for beds for poor and deserving patients, and a $2,000,000 trust fund, the income from which is to be used equally for the benefit of ten Illinois institutions, including the Home for Crippled Children, Chicago; the Chicago Orphan Asylum; the Old People's Home and the Episcopal Home for Aged Persons, a gift from Hobart Williams, Cheshire, Conn.

Pediatric Teachers to Meet.—The Association of American Teachers of the Diseases of Children will hold its tenth annual meeting at the First Presbyterian Church, Woodward and Edmund Place, Detroit, on the morning and afternoon of June 12, under the presidency of Dr. Julius P. Sedgwick, Minneapolis. The address of the president will be on "The Pediatric Control of the New-Born Teaching Clinic" and the program will include the following papers:

"An Obstetrician's View of the Pediatric Control of the Newborn Teaching Clinic," Dr. Jennings C. Litzenberg, Minneapolis.

"An Adaptation of Some of the Modern Mechanical Devices to Clinical Teaching," Dr. Julius H. Hess, Chicago; and a paper by Dr. Isaac A. Abt, Chicago.

"Postgraduate Teaching in Pediatrics," Dr. John Lovett Morse, Boston.

"The Postnatal Clinic," Dr. John M. Dodson, Chicago.

"The Relative Importance from a Teaching Standpoint of the Different Branches of Children's Diseases," Dr. Clifford G. Grulee, Chicago.

"The Place of Pediatrics in the Organization of a Medical School," Dr. Borden S. Veeder, St. Louis.

Examination for Medical Corps of the Navy.—The legislation now before Congress contemplates an increase in the medical corps of the navy from its present strength of 347 to approximately 500. This will materially increase the opportunity at present afforded for entering the medical corps of the navy and also the prospects and rewards for those in the service. An examination will be held, June 19, to fill vacancies in the medical corps. Candidates must be between 21 and 30 years of age, graduates of reputable schools of medicine, and must apply for permission to appear before an examining board. The assignments to these boards, which convene in various parts of the country, will be arranged to suit the convenience of the candidates. The pay of medical officers of the navy is at the rate of $2,000 per annum with ample allowances and they are rewarded in due course by the usual promotions with increase in pay and allowances. Those who intend to take advantage of this opportunity should communicate promptly with the Surgeon-General, U. S. Navy, Navy Department, Washington, D. C.

FOREIGN

Our Foreign Exchanges.—As is evident from our Foreign Current Literature Department, recently the German weeklies have been conspicuous by their absence. Since Nos. 9 or 10 of the *Berliner, Deutsche,* and Munich medical weeklies and the *Medizinische Klinik,* only No. 13 of two of them and No. 15 or 16 of the four have been received. Some of our French exchanges have omitted certain departments recently, saying merely that the medical editor who has charge of that department "is at Verdun." No Austrian journals have been received since No. 10. The numbers correspond to the numbers in this volume of THE JOURNAL, No. 10 being the issue for the week of March 4, and No. 16 for April 15.

Homage to Professor Kitasato in Japan.—Ever since Professor Kitasato resigned his office as the director of the Imperial Institute for the Study of Infectious Diseases, which had been founded and cared for, the past decade, in consequence of the amendment of the Imperial Ordinance which took place quite against his and his followers' wishes, public sympathy has been aroused to help him in completing his new enterprise in establishing an institute, which was completed in December last. His merit has been appreciated and recognized by over 400 noted diplomats, statesmen, business men and others of his native province, Kumamoto, who held a meeting at the Central Terminus Hotel, April 10, at which they presented him with a medal in order to express their recognition of his achievements in promoting bacteriology, public health and medicine.

The "Apotheosis" of Guido Baccelli.—This is the term applied by Italian exchanges to the memorial ceremony held recently at Rome in honor of Senator and Prof. Guido Baccelli, who was also prime minister at one time, and always took a leading part in the administration of the state, in medicine and in scientific innovations. His son presented the state with the uniform worn by Guido Baccelli as minister, his numerous decorations from national and foreign authorities, and the souvenir medals struck off on various occasions, as when the excavations of the Roman forum were completed. This work was initiated by him and conducted under his superintendence. All these mementoes are to be preserved in the Capitoline Museum. His obituary notice in these columns, Jan. 22, 1916, p. 288, states that in 1901 he had published over sixty works on different phases of medicine and anatomy. Professor Maragliano is now compiling a collection of his works and letters.

Discoverer of the Infectious Jaundice Spirochete Awarded Asakawa Prize.—The seventeenth annual meeting of the Kitasato Institute Alumni Association was held on April 3 and 4, and at the general meeting held on the afternoon of the second day the discoverer of the cause of infectious jaundice, Professor Inada, and his assistant, Dr. Ido, were awarded by Professor Kitasato the prize of the late Professor Asakawa fund. The prize consisted of a gold medal and a sum of money. It is offered for the best work on bacteriology, parasitology, immunology and study of infectious diseases carried out and published in Japan during the preceding year. The work consisted of the discovery of the cause of the infectious jaundice, which prevails endemically not only in Japan but also in other countries. The causative agent has been discovered to be one of the species of spirochetes which he named *Spirochaeta icterohemorrhagica* n. sp. His first report appeared in the *Fukuoka Ika-Daigaku-Zasshi* (*Journal of the Medical College of Fukuoka Imperial University*) on Jan. 20, 1915, and is entitled "Preliminary Report on the Study of the Spirochetosis that Develops Icterus and Hemorrhages that Prevail in Japan: syn. Weil's disease, Febrile Jaundice or Icterous Plague."

WAR NOTES

Ambulances for War Zone.—Madam Daisy Mazzuchi, who has been raising funds for the Italian Red Cross, has sailed for Italy, taking with her ten automobile ambulances which she has purchased with the money subscribed.

Personal.—Dr. Malcolm C. Grow, Philadelphia, who has recently returned after service with the American Red Cross in Russia, advocates the establishment of more Red Cross stations in Russia.——Dr. Wilfred T. Grenfell of Labrador, who has just returned after a tour of duty in France with the Harvard unit, spoke in St. Paul's Cathedral, Boston, May 14, advocating preparedness. Dr. Grenfell has returned for the summer to his work in Labrador.

More Surgeons for German Hospitals.—Units No. 4 and 5 of the German-Austrian-Hungarian Relief Society were given a dinner at the Hotel LaSalle, Chicago, by Drs. Carl Beck, Otto L. Schmidt and L. Saurenhaus. Unit No. 4, which sailed for Europe from New York on the *New Amsterdam*, May 27, is in charge of Dr. John R. McDill, Milwaukee, Wis., and the other medical members of the units are Drs. Frank Hegler, St. Louis; Edmund H. Mensing, Rochester, Minn., and Harry C. Rolnick, Chicago, together with four nurses. This unit is assigned to duty in Germany. Unit No. 5, which sailed from New York on the *Frederick*, May 31, is to work in Austria and is in charge of Dr. Paul F. Martin, Indianapolis, whose assistants are Drs. W. H. Moore, Indianapolis, and Drs. Jacob J. Minke, and George E. Kirby, Chicago, with three nurses from Chicago and one from Indianapolis.

LONDON LETTER

LONDON, May 15, 1916.

The War

THE SUPPLY OF MEDICAL OFFICERS

The adoption by Parliament of conscription for all men between the ages of 18 and 41 has altered the problem of obtaining sufficient medical officers for the army. Curiously, a physician connot be compelled to serve in his professional capacity, but only as a combatant. Needless to say, he is not likely to choose the latter when his services are required in the former capacity. Under the enrolment scheme of the Central Medical War Committee, described in previous letters to THE JOURNAL, a pledge was given that physicians who enroll would not be called up until 75 per cent. of the possible constituency had enrolled. But before this percentage had been reached, the War Office asked for more medical officers, which must render the keeping of the pledge difficult unless, in order to avoid combatant service, more physicians enroll.

THE DUBLIN REBELLION

The short-lived Dublin rebellion was responsible for a large number of casualties, of which 521 occurred among the soldiers, police and loyal volunteers. Of these 133 were fatal. There is no means of estimating the casualties among the rebels, who concealed them when possible, but they must have considerably exceeded those on the other side. The number of civilians reported as dead in the hospital amounted to 160. How many of these were harmless civilians shot in the streets and how many were rebels is not known, as many of the latter did not wear uniform, or may have exchanged it for civil attire. A very sudden strain was imposed on the Dublin hospitals near the fighting area, to which they responded admirably. One hospital, the Richmond, was seized by the rebels, and three of the visiting staff who happened to be there were kept prisoners for a whole week. The rebels brought their wounded into this hospital and removed them as soon as they could. Many physicians and nurses were absent from Dublin on the Easter Monday of the outbreak, but they returned as rapidly as possible to their posts. From Monday to Sunday the medical staffs worked almost incessantly, and the Red Cross and St. John Ambulance organizations did splendid work in removing the wounded under fire. The rebels respected the Red Cross, but in the darkness men bearers were unrecognizable and fired on. Then the nurses repeatedly ran out with stretchers and carried in the wounded. To add to the horrors, the immense fire which devastated Sackville Street crept nearer and nearer to the Jervis Street hospital, causing great anxiety; but fortunately the building escaped. In this hospital, as well as in the Mater Misericordiae, the staffs were for days virtual prisoners, because of the danger of passing through the streets. Many of the hospitals were repeatedly struck by bullets, and one was threatened by the fire of a big gun, the officer in charge of which was unaware of the proximity of the hospital. As the city gas supply was cut off early in the week, operative work in the hospitals was rendered very difficult. One ambulance worker was killed and also one nurse, and three army surgeons were wounded. One of the buildings occupied by the rebels was the Royal College of Surgeons. Little damage was done, however; some of the windows were riddled by rifle and machine gun fire, and some damage was done to the walls and furniture. Some of the library books were taken to form barricades, and were more or less damaged. The ammunition used by the rebels was of all kinds, from the modern nickel-covered rifle bullets to large soft lead bullets with the point cut off, and even 12-bore cartridges filled with buckshot and slugs. Some of the wounds inflicted on the military were consequently severe, especially those traversing the chest and head. At the Royal City of Dublin Hospital all the wounds were washed with hypochlorite solution, and extensive wounds were left open and packed with gauze wet with hypochlorite solution, the surrounding skin being in all cases painted with tincture of iodin. This treatment appears to have been successful, even extensive wounds usually healing without much sepsis. Proximity to the hospitals gave the great advantage of early operation. In one case a man was brought into the Royal City of Dublin Hospital within half an hour of being shot in the back; the bullet had emerged under the right costal margin. He was immediately taken to the theater and the abdomen was opened; the right lobe of the liver was so extensively torn that it was impossible to suture it, but by

packing both the torn cavity and all around they were able to check the hemorrhage, and the patient is now recovering.

CEREBROSPINAL MENINGITIS AMONG TROOPS

An important report on the epidemic of cerebrospinal fever among the British and Canadian troops stationed in England during the latter part of 1914 has just been issued. During the years 1913 and 1914, cerebrospinal fever prevailed in this country to a somewhat greater extent than had previously been experienced, and in the first half of the year 1915 this increase assumed large proportions. In 1913, 305 cases were reported, and in 1914, 315. In 1915 the number of cases in the civil population had increased to 2,565. This increase coincided with the military mobilization of a large part of the male population. Although the disease was present in England and Wales during 1914, and before that time, it is suggested that a fresh strain of infection was brought from Canada at the end of 1914 to this country by the first Canadian contingent which came to Salisbury Plain to undergo their final military training. It appears that cases had occurred among the Canadians in their camp at Valcartier before embarkation, and that other attacks occurred among them during the voyage to this country and just after their arrival. About twenty-nine cases had been observed among the Canadian troops up to the middle of February, and twenty-five had proved fatal. The predisposition to this infection may perhaps have been increased by the unavoidable overcrowding in camp, which at first took place, as also by the occurrence of cold, wet and inclement weather, and by the unusual exertion and fatigue incidental to the military training of young recruits. No fewer than 2,290 cases were reported in the civil population from January to July, 1915, and 1,088 among the military, a total of 3,378 cases in seven months.

WOMEN PHARMACISTS

The war has caused a large increase in the number of women students of pharmacy, and at present there are as many women students as men at some of the principal schools of pharmacy. Before the war there were at the most only a few hundred women on the pharmacists' register, and very few were actually employed in shops. Now such is the demand for women assistants to take the place of young men that a woman pharmacist who advertises for an appointment receives several offers at salaries ranging from $500 to $1,000 a year.

Clean Milk

At a meeting of the National Clean Milk Society, Sir Thomas Barlow spoke on the failure of the various tests to produce a good imitation of mother's milk during the past twenty-five years, the greater number of infants' foods being deficient in fats. There should be as little tinkering as possible with food intended for children. As the sterilization of milk and the use of dried foods spread in upper class nurseries, infantile scurvy was seen. Milk should be pure, even if it was sometimes diluted or modified, but it must not be tinkered with. There must be cleanliness of the byre, the cow, the cow's food, the vessels from which it drinks, and the hands of the milker.

Mr. Wilfred Bucklet, chairman of the Council of the Society, said that within the last forty-eight hours he had had a sample of certified milk tested at the Lister Institute, which contained 12,500,000 bacteria to the cubic centimeter. After describing the dangerously unclean conditions under which milk was produced on farms, he said that he had seen a man bottling milk over a gutter and pulling the covering disks from his pocket. In New York four years ago twenty-four men were imprisoned without the option of a fine for bottling in the streets. The society was advocating the use of the score card system of dairy farm inspection by local authorities as in America, where marks were given for milking with a dry hand, among other things. This has been already introduced in Bradford and in Birmingham, and was being considered in Manchester. They were advocating that assistance should be given to owners of herds who wished to free them from tuberculosis, and they wished to induce railway companies to provide refrigerated cars to be used solely for the transportation of milk and to offer reasonable rates for the carriage of milk in bottles or other special vessels. It was sought also to make it illegal to open churns in transit and to promote compulsory annual licensing of all dairy farms and milk shops. The society was also advocating the authorization by legislation of definition of a grade of milk inferior to "certified" milk, which shall be produced from herds free from tuberculosis and contain not more than 60,000 bacteria per cubic foot.

PARIS LETTER

PARIS, May 4, 1916.

The War

A NEW SOCIETY FOR MILITARY SURGEONS

In previous letters I have spoken of the formation of several societies composed of military surgeons for the discussion of medical and surgical questions raised by the war. In addition to societies of this kind connected with the armies, others have been formed in the interior. Thus, at a recent meeting of military surgeons of the sixteenth region, which includes the five departments of Hérault, Aude, Lozère, Tarn and the Pyrénées-Orientales, it was decided to have a medico-chirurgical meeting twice a month at Montpellier. In view of the special object of these meetings, which is the interchange of medical and surgical knowledge particularly useful to military surgeons, the scientific side of the discussions will not be developed to the exclusion of their utilitarian aspect. It is intended the morning after each meeting to have practical lectures and demonstrations in the service of one of the "specialist" centers. In order to facilitate the attendance of the practitioners of the region at these meetings, the regional director of the public health service intends to give leave of forty-eight hours as freely as the necessities of the service will permit it. The proceedings of these meetings will be published in the *Montpellier médical*, which will reappear for this special purpose (it has ceased publication since the commencement of the war). Membership in the society will include subscription to the journal. Each member will make a small three-monthly payment, varying with his rank. This is, exclusively, to cover the cost of printing and mailing the *Montpellier médical*.

A RUSSIAN MEDICAL MISSION IN FRANCE

The union of the Russian zemstvos has sent a mission to study the general organization of the French medical service, both in the provinces and in the armies. This mission is engaged in the study of the public health service in Paris, of the Saint-Maurice school for the reeducation of cripples, of the blind asylum at Reuilly, of the convalescent home at Clignancourt and of the Pasteur Institute. It will next visit the 14th region (Lyons), and thence it will go to the front.

HELP FOR THE BLINDED VICTIMS OF THE WAR

A new organization called L'Aide aux aveugles de guerre, with headquarters at 2 Rue Balzac at Paris, has just been formed. The object is to get into touch with blinded soldiers, whether reeducated or not, with a view to providing them with immediate moral and material support and also to investigate the means available to remedy as far as possible the misfortunes of these victims of the war.

VACATION ARRANGEMENTS FOR THE RED CROSS NURSES

Several owners of large hotels in Switzerland are offering to ladies of the French Red Cross accommodation at exceptionally low prices during the months of July, August and September. Under arrangements made by a committee of Swiss lady patrons, the choice of the nurses, who are to benefit by this arrangement which permits of a stay of three weeks, will be made by the French Red Cross committees. M. Gustave Ador has accepted the honorary presidency of this new organization.

VALUE OF VARIOUS DRESSINGS IN WAR SURGERY

Dr. Le Für has communicated to the Société de médecine de Paris his observations of eighteen months of dressings in war surgery. In the first place, with the exception of certain bullet wounds which remain aseptic throughout, war wounds are, as a rule, seriously infected and antisepsis and not asepsis is required. Simple aseptic dressings are wholly useless in the majority of such cases, especially in wounds due to shell fragments complicated by bone or joint injuries. Among the antiseptics which have given the best results in Le Für's practice are hydrogen peroxid, dilute solutions of silver nitrate (for sloughing and suppurating wounds) phenol solutions and various chlorinated solutions (Labarraque's solution and Javelle water). He advises, after thorough washing with one of these, the application of wick drains saturated with concentrated solutions. In case of excessive suppuration, free drainage, continuous aspiration and sometimes continuous irrigation are indicated; finally, when the wound is well disinfected and exposed freely, wet aseptic dressings, using common salt solution, chloroform water, very dilute silver nitrate or dry dressings to hasten cicatrization (iodin and zinc peroxid). Indolent wounds should be stimulated by hot air and especially by exposure

to the sun (heliotherapy). Long-standing fistulas should be cauterized energetically with zinc chlorid or silver nitrate; it is sometimes advisable, after scrupulous disinfection, to close them by paraffin or one of the special waxes made for this purpose; this is especially the case in bony cavities. If they persist, they must be curetted or excised. In case of pleural suppuration and fistula the ordinary dressing must be supplemented by ether wick drains to promote drying; and, especially, by respiratory gymnastics. It is very important, in old wounds, to vary the dressing, as the benefit obtainable from one kind of dressing, frequently repeated, seems to be rapidly exhausted.

Death of Professor Jungfleisch

M. Jungfleisch, professor of organic chemistry at the Collège de France, is dead at the age of 77. Born in Paris in 1839, Jungfleisch was for more than thirty years professor at the École supérieure de pharmacie de Paris. His work on organic chemistry, written in collaboration with Berthelot, had, at one time, a great vogue in scientific circles. Jungfleisch was a member of the chemical section of the Académie des sciences and, since 1880, a member of the pharmaceutical section of the Académie de médecine.

Anaphylaxis and Prophylactic Injections of Antidiphtheric Serum

The minister of the interior, having requested the Académie de médecine to report to him on the accidents following the injection of antidiphtheric serum, Dr. Netter of the Faculté de médecine de Paris has deposited a report on this subject in which he puts the matter in its proper perspective. The fear of these accidents, which is very widespread, both in the medical profession and among the people, has too often formed an obstacle to the use of the serum in cases in which this was absolutely necessary. Still more has it obstructed the use of antitoxin for prophylaxis. It is, of course, known that disagreeable sequelae, and even death, have been observed as the result of a single injection. With injections spaced out at intervals of more than ten days, these accidents are more immediate and more alarming. This is the phenomenon of anaphylaxis. Nevertheless, serum anaphylaxis is far less frequent and less grave in man than in the guinea-pig. In children after subcutaneous injections, serious results are extremely rare. Only two well proved deaths are known as the result of several hundred thousand reinjections. It will not be reasonable, therefore, because of these altogether exceptional dangers, to give up reinjections and, still less, first injections. Experiment has shown that in animals, which have previously received horse serum, antitoxins introduced in later injections are very rapidly eliminated. There has been a tendency to conclude from this that a previous injection diminishes the efficacy of new ones. A study of the course of 123 cases of diphtheria, occurring in persons who had previously received curative or preventive injections, has shown that there is no foundation for this aprehension. The ill effects of therapeutic serums can be attenuated or warded off by various means. Whenever possible, for reinjection and even for first injections, one should use Besredka's method; that is to say, commence by the injections of extremely small quantities of serum.

The preventive efficacy of antidiphtheric serum was fully confirmed last year in the schools of the department of the Seine where, on the initiative of Dr. Dubief, 2,582 prophylactic injections were given.

The Académie de médecine, considering Netter's report, passed unanimously the following resolutions:

1. Serious accidents caused by a first injection (serum sickness) or by a reinjection (anaphylaxis) are very rare, especially if the injection is made into the subcutaneous cellular tissue. The fear of such results should never be allowed to interfere with the use of serotherapy.

2. The Académie de médecine maintains, with regard to the advisability of prophylactic injections of antidiphtheric serums, the opinion which it pronounced in 1902. These injections should be practiced on children in all families or institutions in which cases of diphtheria have occurred. They should also be recommended in children's schools when diphtheria assumes an epidemic character. The académie is of the opinion that, concurrently with these injections, disinfections, isolation of the sick, and the searching for, isolation and treatment of carriers should be carried out whenever possible.

Association News

THE DETROIT SESSION

Hotel Reservations

LOCAL COMMITTEE REQUESTS CONFIRMATIONS

The Committee on Arrangements for the Detroit session reporst that it desires to take every precaution against errors and confusion in arranging for the accommodation of those who attend the coming annual session. In order to do this, the committee requests the cooperation of the physicians who have made hotel reservations and have been asked by the hotel management to confirm these. It will be of assistance in guaranteeing such reservations if those who hold these will make reply to the request of the hotel management that these reservations be confirmed.

In addition, the local committee will appreciate it if those who hold reservations but who will not be in attendance at this coming session will write to the subcommittee on hotels, addressing Dr. Rolland Parmeter, 33 East High Street, Detroit, returning the slips which have been forwarded assigning hotel reservations.

SPECIAL TRAIN FROM ST. LOUIS TO DETROIT

The outlook is promising for a special train from St. Louis to Detroit for Fellows and their wives from Missouri, Arkansas, Kansas, Oklahoma and Texas. The train will leave via the Wabash Railroad Sunday, June 11, about 6:30 p. m., arriving in Detroit Monday, June 12, 7:30 a. m. Option of return via Chicago without additional fare, or return via lake steamer from Detroit to Chicago for $5 additional fare. All passing through St. Louis en route to Detroit with tickets over the Wabash Railroad are invited to reserve space on this special train. Communications should be addressed to Dr. Edward J. Goodwin, 3517 Pine Street, St. Louis.

PHYSICIANS' SPECIAL LAKE CRUISE

The Steamer *South American* will leave Chicago Saturday, June 10, arriving in Detroit Monday, June 12. The rate is $30, and includes transportation, meals and berth en route Chicago to Detroit, also use of state room and berth and breakfast while steamer is at Detroit, June 12, 13, 14 and 15.

Passengers leave steamer after breakfast Thursday morning, June 15. The steamer does not return to Chicago after the meeting.

The round trip rate, by boat Chicago to Detroit, and rail Detroit to Chicago, is $36.80.

At time reservations are made passengers may purchase one way or round trip tickets.

DETROIT CLINICS

From June 7 to 12, inclusive, and on June 17, a series of clinics will be given in Detroit. Those attending the Detroit Session are invited to these clinics. Programs can be obtained from the Local Committee on Arrangements, 33 High Street East, Detroit.

Marriages

P. A. SURG. CARY TRAVERS GRAYSON, U. S. Navy, to Miss Alice Gertrude Gordon of Washington, in New York City, May 24.

FRANCOIS JOHN THEODORUS WAS, M.D., Chicago, to Miss Josephine Von Swartzenberg of Paterson, N. J., May 20.

WILLIAM CARL GOENNE, M.D., Eldridge, Iowa, to Miss Norma Otto of Davenport, May 24.

FRED AUGUST THYSELL, M.D., to Miss Myrtle Graham, both of Rhinelander, Wis., May 10.

CHARLES STOLTZ, M.D., to Miss Mary Lou Foster, both of South Bend, Ind., May 17.

JOHN A. TAMISIEA, M.D., to Miss Mary E. Burns, at Omaha, May 12.

Deaths

Col. John Leighton Phillips, M. C., U. S. Army, Takoma Park, D. C.; aged 57; commanding the Walter Reed General Hospital, Takoma Park, D. C.; a Fellow of the American Medical Association; died in the grounds of that institution, May 23, from the effects of a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health, the result of a fall three or four months before. Colonel Phillips was a native of Chapel Hill, N. C., was graduated from the College of Physicians and Surgeons in the City of New York in 1882; entered the army as assistant surgeon a year later; was made captain and assistant surgeon in 1888; major and surgeon in 1900; lieutenant colonel in 1908 and was promoted to colonel, April 13, 1912, and served for three years as assistant chief sanitary officer of the Isthmian Canal Commission and chief surgeon of the Ancon Hospital.

John Chamberlain Hollister, M.D., Pasadena, Calif.; Northwestern University Medical School, Chicago, 1900; aged 43; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California, Chicago Surgical Society and a fellow of the American College of Surgeons; formerly instructor in gynecology in his alma mater and assistant professor of gynecology and surgery in the University of California; for several years a practitioner of Chicago; surgeon to the Home for Crippled and Destitute Children; adjunct surgeon to St. Luke's Hospital and surgeon to St. Luke's Hospital and Dispensary; died at his home, May 6, from pneumonia.

Elmer M. Brown, M.D., Tacoma, Wash.; Willamette University, Portland, Ore., 1879; aged 58; a Fellow of the American Medical Association; a member of the North Pacific Surgical Association and a Fellow of the American College of Surgeons; surgeon of United States Volunteers during the Spanish-American War with service in the Philippine Islands; at one time health officer of Tacoma and physician of Washington County, Ore.; dean of the medical profession of Tacoma and prominent in civic work; died at his home, May 12, from carcinoma of the superior maxilla.

Lieut. Luther Mitchell Ferguson, M. R. C., U. S. Army, on duty at the Walter Reed General Hospital, Takoma Park, D. C.; aged 27; died, May 23, in that institution, from the effects of injuries received in a fall from his horse. He was born in Chin Kiang, China, July 2, 1888, and was graduated from Harvard Medical School in 1915. He was graduated from the Army Medical School in 1916. He was a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States.

Robert Lee Bowcock, M.D., Anniston, Ala.; University of Virginia, Charlottesville, 1886; a member of the Medical Society of Virginia and International Association of Railway Surgeons; and formerly president of the Calhoun County (Ala.) Medical Society, Board of Health, and Medical Examining Board; local surgeon of the Southern Railway and division surgeon of the Louisville and Nashville System; died at his home, May 16, from pneumonia.

William Hillkowitz, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1888; aged 49; a Fellow of the American Medical Association; and a member of the Cincinnati Academy of Medicine; physician to the Jewish Foster Home and consulting obstetrician to the Ladies' Society for the Relief of the Sick Poor and the United Jewish Charities; died at the Bethesda Hospital, Cincinnati, May 14, from heart disease.

William M. Harvey, M.D., Detroit; Detroit College of Medicine and Surgery, 1887; aged 52; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; for eight years city physician of Detroit and for twelve years a major in the Medical Corps of the Michigan National Guard; died at his home in Grosse Pointe, Mich., May 13, from cerebral hemorrhage.

S. M. LeCrone, M.D., Tacoma, Wash.; Starling Medical College, Columbus, Ohio, 1878; aged 69; for five years a member of the board of health of Columbus and later assistant city physician; president of the Washington State Pharmaceutical Association in 1904; a member of the Washington Legislature in 1899 and 1903; died at his home, May 17, from arteriosclerosis.

Ralph Aaron Grigsby, M.D., Scottsbluff, Neb.; Tulane University, New Orleans, 1905; aged 33; a Fellow of the American Medical Association; died at his home, May 5, from postpharyngeal abscess.

Clarence Percival Bulson, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1896; aged 50; also a graduate in pharmacy; formerly a member of the staff of St. Luke's and Harlem hospitals; died at his home, May 18.

Frank A. Jordan, M.D., Pecatonica, Ill.; Rush Medical College, 1864; aged 76; a veteran of the Civil War in which he served as assistant surgeon of volunteers; died at the home of his daughter in Freeport, Ill., May 15, from cerebral hemorrhage.

William H. Gibbins, M.D., Clinton, Mo.; Medical College of Ohio, Cincinnati, 1873; aged 64; a member of the Missouri State Medical Association and for many years president of the Clinton School Board; died at his home, May 15.

Edward R. Bragg, M.D., Biloxi, Miss.; Tulane University, New Orleans, 1888; aged 54; formerly a Fellow of the American Medical Association; for several years a physician in the Isthmian Canal Zone; died at his home in Biloxi, May 12.

Edgar Rush Burns, M.D., El Paso, Texas; Chattanooga (Tenn.) Medical College, 1901; aged 41; formerly a practitioner of Cullnan, Ala., and a member of the Medical Association of the State of Alabama; died at his home, May 10.

George L. Hoel, M.D., Fort Collins, Colo.; Barnes Medical College, St. Louis, 1898; aged 54; a Fellow of the American Medical Association; was killed in an automobile accident at Fort Collins, May 22.

Guy Marion Black, M.D., Pocahontas, Ark.; College of Physicians and Surgeons, Memphis, Tenn., 1910; aged 40; a member of the Arkansas Medical Society; died at his home, May 12, from heart disease.

Thomas A. Welch, M.D., Groesbeck, Texas; Tulane University, New Orleans, 1897; aged 46; a Fellow of the American Medical Association; died at the home of his sister in Groesbeck, May 11.

John Preston Deckard, M.D., Mattoon, Ill.; University of Louisville, Ky., 1880; aged 59; a member of the Illinois State Medical Society; died at his home, May 13, from cerebral hemorrhage.

Louis Young, Wise River, Mont.; (license, Montana, 1874); for forty years a practitioner of Orleans, Vt.; aged 75; died in a hospital in Butte, Mont., May 17, from malignant disease.

John George Horne, Coffeyville, Kan.; (license, Kansas, 1901); aged 58; a practitioner for thirty-five years; died at his home, May 16, from carcinoma of the stomach.

Joseph H. Jones, Fort Wayne, Ind.; (license, Indiana, 1897); aged 84; for more than fifty years totally blind; died at his home, May 17, from heart disease.

James Evert Simmons, M.D., Rockport, W. Va.; University of Louisville, Ky., 1909; aged 27; died suddenly at his home, April 21, from heart disease.

James W. Reader, M.D., Maryhill, Wash.; Rush Medical College, 1870; a veteran of the Civil War; died at his home, May 16.

Norman K. Morris, M.D., Denver; Cleveland University of Medicine and Surgery, 1876; aged 64; died at his home May 12, from cerebral hemorrhage.

Thomas Clayton McCarty, Spottsville, Ky. (license, Kentucky, examination and twenty-seven years of practice, 1894); aged 76; died at his home, May 10.

Frank Grider, M.D., McKinney, Ky.; University of Tennessee, Nashville, 1892; aged 48; died at his home, May 10, from cerebral hemorrhage.

Joseph Jones, M.D., Stockbridge, Mass.; Eclectic Medical College of Philadelphia, 1861; aged 75; died at his home, March 20, from nephritis.

Benjamin F. Richards, M.D., Pullman, W. Va.; Lincoln, Neb., Medical College, 1897; aged 81; also a druggist; died at his home, April 27.

Robert A. Duke, M.D., Lake Charles, La.; Nashville, Tenn., Medical College, 1866; aged 85; died at his home, March 21, from senile debility.

Vincent H. Rose, M.D., Ladoga, Ind.; Rush Medical College, 1869; aged more than 80; died at his home from senile debility, May 8.

Hugo Speier, M.D., Minneapolis; University of Minnesota, Minneapolis, 1884; aged 65; died in a hospital in Rochester, Minn., May 7.

Daniel Harley Kent, Boston; (license, years of practice, Massachusetts); aged 83; died at his home, May 9.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE WINE OF CARDUI SUIT

(*Continued from page 1733*)

CROSS-EXAMINATION BY MR. HOUGH

TESTIMONY OF DR. FRANK BILLINGS (*cont.*)

Q.—Doctor, you are a member of the A. M. A., are you? *A.*—I am.

Q.—Are you an officer of it? *A.*—Not now.

Q.—Have you been? *A.*—I was President of the American Medical Association, in 1902 to 1904, and Treasurer of it, custodial treasurer—I cannot remember exactly how long, but I think until 1910.

Q.—Are you a trustee? *A.*—I am not.

Q.—Have you been? *A.*—I have not.

Q.—Do you read THE JOURNAL regularly? *A.*—I do.

Q.—Do you know when they first commenced to attack viburnum prunifolium? *A.*—No, I do not.

Mr. T. J. Scofield:—That is objected to. It is not cross-examination of anything.

THE COURT:—He has answered the question.

Mr. T. J. Scofield:—All right.

Mr. Hough: Q.—You are familiar with the working of the Propaganda Department? *A.*—You mean of the Council on Chemistry and Pharmacy? I am.

Q.—You know that it is attacking all proprietary medicines that are sold to the consumer?

Mr. T. J. Scofield:—That is objected to.

THE COURT:—Objection sustained. Dr. Billings was not asked anything about the American Medical Association, on his direct examination.

Mr. Hough:—I was under the impression that I was entitled to show the environment of the witness for the purpose of determining—

THE COURT:—You may show his connection with the Association.

Mr. Hough:—for the purpose of determining the value of his opinion that he has expressed. If he has a prejudice, I am entitled to bring it out.

THE COURT:—He has told you that he has read the magazine of the American Medical Association.

Mr. Hough:—I want to find out if he is familiar with the propaganda work and if he endorses the propaganda work?

Mr. Walker:—May I make a suggestion?

THE COURT:—He may answer the question.

Mr. T. J. Scofield:—What was the question?

(The pending question was then read.)

Mr. T. J. Scofield:—There is a false assumption contained in the question.

Mr. Walker:—This is cross-examination, and we have a right to assume things in the question, and the witness can answer as he sees fit.

THE COURT:—I think counsel has a right to object on the ground that there is an assumption of fact in the question; that is not in the case.

Mr. Hough:—I think the witness is amply able to take care of himself, and if he thinks that I have assumed something in the question that he does not want to include in his answer, he can exclude it.

To which ruling of the Court the defendants, etc., excepted.

A.—I do not know that they attack all proprietary and "patent medicines." The purpose of the Council on Chemistry and Pharmacy is to investigate so-called proprietary and "patent medicines," and, after analysis, to advise the members of the association and the other readers of THE JOURNAL that certain of those proprietary remedies are of value and that certain of them are without value.

Mr. Hough: Q.—What article do you know of in the Propaganda Department that states that a medicine concerning which it writes is of value?

Mr. T. J. Scofield:—I object to that as not cross-examination.

THE COURT:—Objection sustained.

To which ruling of the Court the plaintiffs, etc., excepted.

Mr. Hough: Q.—Have they ever held any proprietary medicine in the Propaganda Department to be valuable?

Mr. T. J. Scofield:—I object to that as not being involved here, and not cross-examination.

THE COURT:—Objection sustained.

Mr. Hough:—Why, that is brought out by his answer.

THE COURT:—No, he stated what the purpose was. He stated that the purpose of the Propaganda Department—

Mr. Walker:—Don't you ordinarily tell what the purpose is, the act? And if they have acted directly to the contrary of what he states is the purpose, that refutes his statement as to what the purpose is.

THE COURT:—Why, Mr. Walker, if you have the magazines here, and want to introduce them you may show what the Propaganda Department has done.

Mr. Walker:—We want an opportunity to show his information about it. If he testifies that the purpose is one thing, if your Honor please, and the purpose is to inform doctors what are good proprietary medicines and to condemn what they think are bad, then sometime in their history they must have been able to endorse some proprietary medicine as good. If they never did, then the policy of the paper refutes what the witness has said.

THE COURT:—The difficulty with the question is that it is not proper cross-examination, and it does not follow at all from the answer given by the witness.

Mr. Loesch:—What are we here for?

Mr. Walker:—It only goes to the attitude of the witness, that is all.

Mr. Hough:—And usually some latitude is allowed.

THE COURT:—You may save the point.

To which ruling of the Court the plaintiffs, etc., excepted.

Mr. Hough:—What was the last question?

THE COURT:—The last question was, did the witness know of any article in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION that ever endorsed any proprietary medicine, The objection to that is sustained.

The Witness:—There are certain—

Mr. Hough:—Never mind, you are not now asked anything.

The Witness:—Beg pardon.

ATTITUDE TOWARD SECRET PREPARATIONS

Mr. Hough: Q.—What is your own attitude towards such medicines offered to the consumer? You are opposed to them, are you not?

Mr. T. J. Scofield:—That is objected to.

THE COURT:—He may answer that.

To which ruling of the Court the defendants, etc., excepted.

A.—Certain proprietary medicines—

Mr. Hough: Q.—I am talking about those that are sold to the consumer as distinguished from those which are sold to the doctors to be dispensed on prescription. *A.*—No, I am—

THE COURT:—Just a minute, Mr. Hough. Are there any medicines that are sold to the consumer that are not sold to the doctors?

Mr. Hough:—There are medicines called proprietary medicines which are deemed ethical, because they are sold only to the doctors and not to the public.

THE COURT:—That was not the question.

Mr. Hough:—Then there are certain—

THE COURT:—Just a moment. Your question assumed that there were some medicines that the consumer could buy which the doctor could not buy.

Mr. Hough:—No. There are none, of course, which the consumer can buy which the doctor cannot buy. Any citizen can buy, no matter what his vocation, or profession is, but I am asking the doctor, with reference to his attitude about secret proprietary medicines, which are offered to the general public, whether the purchaser is a doctor or a sick woman.

Q.—What is your attitude toward them, you are opposed to them, aren't you? *A.*—Absolutely.

Q.—Now, when you answered the last question—

THE COURT:—Let me interrupt the cross-examination long enough to ask the doctor to explain why he is opposed to them. *A.*—I am opposed to any medicine that is secret.

Mr. Walker:—May we note an exception there.

THE COURT:—Certainly.

To which ruling of the Court in propounding his question to the witness, as last hereinabove appears, the plaintiff, etc., excepted.

The Witness (Continuing):—That is secret in its preparation. I will not give myself, nor will I advise anyone else to take remedies the character of which I know nothing about, and a proprietary medicine that is a secret medicine is in a sense a nostrum. I not only am opposed to them, but I object to them, and I will do anything I could to overcome their influence.

Mr. Hough:—Doctor, you have used Warburg's Tincture in your practice? *A.*—Perhaps once or twice in my life.

Q.—Now, you know that Warburg's Tincture was originally a secret formula medicine, don't you? *A.*—Yes.

Q.—And you know that Warburg was induced to make the formula public and then he lost the rights which he was entitled to in the

medicine, and the profession adopted it, isn't that so? *A.*—I do not know that.

Q.—Haven't you read that? *A.*—No.

Q.—You know nothing about that? *A.*—No.

Q.—Now, in answer to the last question—was that in the same sense in which you would say it would be bad to advise everybody in Chicago to take beefsteak once a day? *A.*—No.

Q.—Not in that sense? *A.*—No.

Q.—Would it be in the sense in which you would say it was bad to advise them to take any particular kind of food three times a day, because the food might agree with some, this particular kind, and disagree with others? *A.*—No, not in that sense.

Q.—Not in that sense? *A.*—No.

OXIDIZED ALCOHOL

Q.—Now, it is an established fact, and a recognized fact, in your profession, isn't it, that a certain amount of alcohol is freely oxidized in the system, isn't it? *A.*—It probably is.

Q.—And the amount of alcohol which is recognized as freely oxidized in the system is never considered dangerous, is it? *A.*—I would not say that.

Q.—When a person taking alcohol, which has a bad effect, that is always because it has not been freely oxidized in the system, isn't it? *A.*—Not necessarily.

Q.—What do you understand by being oxidized in the system? *A.*—I understand that alcohol may be burned up in the body, oxidized as we say, into carbonic acid and water. The carbonic acid is thrown out through the lungs and the water is thrown out through the skin and kidneys, it is no longer alcohol. It is burned up.

Q.—Well, doesn't that mean—I mean, doesn't the term mean that it does not throw any extra burden upon any of the organs? *A.*—Not necessarily.

Q.—Does it in any case? *A.*—Yes, sir. In that term—alcohol comes under what we call carbohydrates because it is burned up into carbonic acid and water, and the effort of the body to do that may overstrain. No one can say—you cannot say it won't be harmful and no one can say in any given individual how much of the alcohol you take is burned up, and how much of it may be converted into fat in his body, or how much of it may be—may go out, and exist in the tissues and irritate them.

Q.—In other words, you mean that there are exceptions to all rules? *A.*—Yes, sir.

Q.—But the general rule is that there is a certain amount of alcohol which is regarded as being freely oxidized? *A.*—That is its natural disposal in the body.

Q.—Now, when you take forty-eight drops of alcohol by itself, is the physiological effect precisely the same as though you took that alcohol with five times the amount of water? *A.*—Not exactly. When alcohol is taken in a concentrated form, its first effect is to irritate the mucous membrane of the mouth, esophagus, the gullet and the stomach.

Q.—You are talking now about the 48 drops of alcohol alone? *A.*—Yes, I understand the question to be whether it has the same effect, whether concentrated or diluted.

Q.—That is right. *A.*—When concentrated, it will irritate the tissues it touches. That affects the nerves and at once, after the concentrated dose, the heart will go more rapidly for a period of a few minutes and the patient will be flushed and the temperature raised for the time being. That is the first effect of concentrated alcohol.

If it is diluted, dependent upon its dilution, it will have less irritating effect and, finally, the effect of both will be the same, as it reaches the blood stream and undergoes the change in the liver and in the blood stream which alcohol does. But the effect, the physiological effect, would depend upon its dilution.

Q.—Now, is it not an accepted theory among the profession, that is, among your profession, that up to 20 per cent.—that alcohol up to 20 per cent. hastens the absorption of the medicines which are in it? *A.*—No.

Q.—Is there a theory on that subject with reference to any per cent. of alcohol? *A.*—No, not that I know of.

Q.—Then you would say that alcohol in no per cent. hastens the absorption of medicine? *A.*—Not necessarily.

Q.—Does it in any case? *A.*—Not that I know of.

Q.—Are you familiar with the Atwater and Chittenden experiments as to the physiological effect of alcohol?

Mr. T. J. Scofield:—Wait a minute; it don't make any difference whether he is familiar with it or not.

THE COURT:—He may answer.

To which ruling of the Court the defendants, etc., excepted.

A.—I did not get the question.

Mr. Hough:—Atwater and Chittenden. *A.*—I am to some degree, I have read both of them.

Q.—Are you familiar with Cushny's statement on those subjects? *A.*—I have not read Cushny's last statement on that.

Q.—If they should state a contrary opinion, would it affect your opinion? *A.*—Not at all.

Mr. T. J. Scofield:—Wait a moment. I wish to interpose an objection there.

Mr. Walker:—What is the matter with the question?

THE COURT:—Go ahead, Mr. Hough.

To which ruling of the Court the defendants, etc., excepted.

Mr. Hough: *Q.*—You said you had not read Cushny's last statement. Have you read any of his other statements? *A.*—I read his first work on pharmacology, but I don't remember anything in it concerning that particular thing.

Q.—You mean the alcohol hastening the absorption of medicine? *A.*—Yes.

Q.—Doctor, what combination of these two drugs named in the hypothetical question, would produce the best physiological results in amenorrhea due to anemia? *A.*—What combination?

Q.—Yes. *A.*—I don't know of any combination.

Q.—In any amounts? *A.*—In any amounts.

Q.—Or in any proportion? *A.*—Or in any proportion.

KNOWLEDGE OF CARDUUS BENEDICTUS

Q.—Is your knowledge of carduus benedictus based upon your experience with it, or upon your reading about it? *A.*—I have no experience with it.

Q.—Have you any knowledge on the subject at all? *A.*—Only as I have read it in the literature of the Chattanooga Medicine Company.

Q.—Is there anything in the literature of the Chattanooga Medicine Company which says anything about carduus benedictus? *A.*—No, only as in that combination, as I understood it to exist.

Q.—What literature of the Chattanooga Medicine Company said anything about carduus benedictus? *A.*—I did not say that it said anything particularly about carduus benedictus, but about Wine of Cardui, which I understand contains carduus benedictus.

Q.—I asked you what knowledge you had about carduus benedictus? *A.*—And I answer that I know nothing practically from my own experience about it. That the only literature I have read upon it is in going over the literature of the Chattanooga Medicine Company, about the Wine of Cardui, which I understand contains carduus benedictus.

Q.—Well, is there any literature of the Chattanooga Medicine Company which mentions carduus benedictus? *A.*—I think not.

Q.—Well, then, you could not have read anything about carduus benedictus in the literature of the Chattanooga Medicine Company, could you, other? *A.*—Excepting from what I have learned of the testimony here, by reading of the testimony, the analysis of the remedy, which is said to contain carduus benedictus.

Q.—Is there any part of the testimony which says that the literature of the Chattanooga Medicine Company mentions carduus benedictus? *A.*—In the question, yes, sir.

Q.—Sir? *A.*—The question; yes, sir.

Q.—I did not understand that. *A.*—The question of the attorneys; yes, sir.

THE COURT:—The hypothetical question.

The Witness:—The hypothetical question.

Mr. Hough:—I am asking whether the literature—

THE COURT:—He said there was nothing in it, he has answered that twice. He said that he assumed from what he had heard that the Wine of Cardui contained carduus benedictus.

Mr. Hough:—I did not so understand the witness, but if the Court understood it that way, we will let it go.

Mr. T. J. Scofield:—That is what he said.

Mr. Hough:—No, he said he read in the testimony a reference to carduus benedictus in the literature of the Chattanooga Medicine Company; that is what he said.

The Witness:—I said the testimony given here in this court.

Q.—Well, then, you mean you have not read anything in the literature of the Chattanooga Medicine Company about carduus benedictus? *A.*—Not naming the drug as carduus benedictus.

Q.—Have you ever read about the drug in any medical literature? *A.*—No.

Q.—Would your opinion as to the therapeutic value of the medicine, based we will say principally upon carduus benedictus, be affected by what any medical writer would say about the therapeutic value of carduus benedictus?

Mr. T. J. Scofield:—That is objected to if the Court please.

THE COURT:—He may answer.

To which ruling of the Court the defendants, etc., excepted.

A.—It would not.

Mr. Hough: *Q.*—In other words, without knowing anything about carduus benedictus, or having read anything about carduus benedictus, you expressed the opinion that it is utterly worthless as possessing medicinal value? *A.*—No, I would not say that. It might have certain tonic properties but as a curative agent of any organic disease, such as I have been interrogated about here today, I would say it is worthless under those conditions.

Q.—Well, but outside, doctor, of the hypothetical question, if you have had no experience with carduus benedictus, yourself, and have read nothing in medical literature about the experiences of others with it, how can you say what would or would not be its therapeutic value? *A.*—Well, because neither that nor any other drug will affect the anatomical conditions about which I have been interrogated in this court.

Q.—That was not what I asked you, whether it would affect anatomical conditions or not. The question is, how could you say under those circumstances that the drug did not possess any medicinal or therapeutic value whatever? *A.*—I have already qualified it by saying that I did not say that; that I said it might have certain tonic or other qualities of which I know nothing.

Q.—Will you eliminate from your consideration, for a moment, the statement in the hypothetical question, and answer this question outside of that, as to how you can state what the therapeutic or medicinal value of that drug would be, if you have never read of the experience of others with it, or had no experience yourself with it? *A.*—I cannot answer that outside of the hypothetical question.

Q.—Then you mean that outside of the hypothetical question you could not express any opinion, could you? *A.*—I can express an opinion concerning these conditions about which I have been interrogated.

Q.—I am talking now about the medicinal value or the therapeutic value of carduus benedictus? *A.*—No.

Q.—You could not, could you? *A.*—No.

Q.—Now then, do you know, for instance, how much extractives 20 per cent. of alcohol would take from 30 grains of carduus benedictus? *A.*—No, sir.

Q.—Do you know how much extractives a larger amount of alcohol would take from 30 grains of carduus benedictus? *A.*—I do not.

Q.—Do you know whether a larger amount of alcohol would take any more extractives from carduus benedictus than 20 per cent. of alcohol? *A.*—I do not.

Q.—Now, the hypothetical question is based upon the assumption that the bitter principle is cnicin, which is present in approximately one tenth of a grain per dose. Would your opinion about the medicine be any different—I am talking now not about anatomical conditions, or its effect upon moving bones, but as to the therapeutic value—if the other extractive matter other than the cnicin, possessed properties which acted upon the womb and the generative organs of woman? *A.*—Do I understand you to ask if the other extractives of carduus benedictus, with the exception of cnicin, would—

Q.—If they had the reputation of acting upon the womb of a woman, would your opinion as to the value of the medicine be different? *A.*—Naturally it would, and that would depend too upon what action it had upon the womb necessarily. To act, assume—it may be several things.

Q.—A headache might be due to a menstrual disturbance might it not? *A.*—It might, yes.

Q.—If a medicine contained an ingredient which acted upon those conditions, it might be a medicine which would relieve the headache that was due to those conditions, might it not? *A.*—It might palliate or relieve the headache for a time.

Q.—The word "cure" is used carelessly by both the laity and the profession, or has been in times past, has it not? *A.*—I stated that to the jury.

Q.—I did not hear what you said. *A.*—I stated that to the jury in my direct testimony.

Q.—That that is true? *A.*—Yes.

Q.—Now, there are some conditions of menstrual disturbance or inflammation in the female pelvic cavity which might cause a pain in the back of a woman, might there not? *A.*—Yes.

Q.—If a medicine contained an ingredient which had the reputation of acting upon the womb, or upon the inflammation of those parts, it might be just the medicine she needed to cure that pain, might it not, or relieve that pain? *A.*—Yes, or it might not cure. It might palliate. There are remedies which will relieve backache due to pelvic diseases of women, which have no effect whatever upon the pelvic disease of itself, and so reduce the sensation of the nervous apparatus that the woman has no conception of the ache or pain in her back.

Q.—Don't you think a woman would usually know whether her headache was due to some female trouble, or any of the irregularities of menstruation? *A.*—I do not.

Q.—You do not think that she would know that? *A.*—No.

HEADACHE

Q.—Could a woman ever know, ever have a headache, which she would know the cause of? *A.*—Yes.

Q.—What kind of a headache might she know the cause of? *A.*—It is possible that a woman might so suffer, knowing by examination that she had pelvic disease, like a retroversion, that is, a backward displacement of the womb and some other woman, if it annoyed her constantly, and she was tired out having headaches, might have headaches because of the nervous irritation in the pelvis, and she might learn to know that.

She might learn that she had a headache, because she knew that she had bad eyes, and that the oculist was almost unable to fit her or the eye muscles were unbalanced and he had difficulty in fitting glasses to such an individual, and she would know that her headache was due to the constant eye strain, human fallibility not permitting her to be entirely fitted with glasses. So that there are conditions in which an individual can know the causes of a headache.

But, take it as a general proposition, a woman is not a judge of the cause of the headache any more than a man. A man or a woman cannot tell why they have headaches. Even we doctors sometimes have difficulty in finding out why an individual has a headache. It takes long study.

Q.—If a headache in a woman comes regularly every month at her period, would she not naturally understand, and would not the doctor naturally suppose that it was due to the menstrual period? *A.*—Yes, but that does not necessarily follow that it is because she has got a disease of the pelvic organs that she has a headache. A woman is naturally more nervous at her menstrual periods, more excitable. The whole nervous apparatus is disturbed and in that very ease, the headache may become intensified, and while she or somebody else might ascribe the headache to the menstruation, it is the effect of the fundamental cause.

Q.—Is there any medicine which might relieve a headache which was due to a menstrual disturbance? *A.*—Yes.

Q.—And that would be, I take it, a medicine which the woman would take for the menstrual disturbance? *A.*—Yes. Many do.

HOME REMEDIES

Q.—You said something about a woman during pregnancy taking many simple remedies at her home. What kind of remedies did you mean? *A.*—Oh, simple household remedies. She may be nauseated, and she might take a little essence of ginger, or she might take a little essence of peppermint, or she might apply a little mustard plaster over her stomach for a little while, or she has a headache, and she has, through her family physician some little household remedy which she will take for it. She may take a hot foot bath.

Q.—You have prescribed essence of ginger and peppermint under those conditions? *A.*—Why, certainly, if they were—if the conditions needed them.

Q.—Do you know how much alcohol there was in those essences? *A.*—Yes, sir.

Q.—How much? *A.*—Well, the essence of peppermint is an essential oil, that requires practically all the alcohol to hold it.

Q.—A very large amount of alcohol? *A.*—Yes, but the essence of peppermint would be taken in a few drops, three or four.

Q.—How many drops? *Q.*—Oh, anywhere from three or five or six drops.

Q.—Frequently? *A.*—No, about once or twice a day, or perhaps—and perhaps not again.

Q.—That is practically all alcohol, isn't it? *A.*—Yes.

Q.—And in the ginger? *A.*—And ginger has also a large quantity of alcohol, but the amount of those drugs taken at a time is infinitesimal, and they are not prescribed to be taken three or four times a day, so that the total quantity of alcohol, taken by the individual, is not much over any given period of time. It makes all the difference in the world whether you are taking alcohol of a certain big dosage or a small dosage, with regularity.

Q.—Well, Doctor, what is the largest dose of ginger you have ever prescribed, essence of ginger under those conditions? *A.*—Oh, usually I just simply use a few drops, because it is usually given for its sense of warmth that it causes in the stomach. It has what we call a carminative action, that is, it stimulates the stomach to move, and the woman will belch gas, or, if it is in the intestines, they will pass flatus or they are relieved by it. It is simply a palliative medicine, given for that purpose.

PHYSICIANS' PRESCRIBING ALCOHOL

Q.—Do you think that alcohol given in a medicine, which a doctor prescribes, has any different effect from alcohol which is taken in some home medicine that a person bought without a prescription? *A.*—In single doses, no, but the doctor usually prescribes a certain amount with directions as to when to take it, and when to stop. The patient that buys his "patent medicine" with its alcohol in it takes it of his own volition at any time he chooses, as much as he chooses, and as long as he pleases. It makes all the difference in the world.

Q.—Well, you could ignore the directions of the doctor, or the patient could, as well as ignore the directions on the bottle, couldn't he? *A.*—He could, yes.

Q.—Do you know how many of the pharmacopeial preparations containing alcohol, contain more than 48 drops of alcohol per dose? *A.*—I do not know just how many of them. I know there are a good many of them. There are some of them contain pure alcohol, some of them contain 80 per cent., 75 and 60 per cent. You cannot speak of it in percentage. It is put in in their making as equal parts of water and equal parts of alcohol, or two parts of alcohol and one of water, three parts of alcohol and one of water, or four parts of alcohol and one of water, and so on, so it is not exact percentage.

Q.—You are talking, I think, about percentages. I was asking you if you knew how many of the pharmacopeial preparations such as fluid extracts or tinctures contained in a dose, as laid down either in the pharmacopeia, or the dispensatory, or the National Formulary, contain in a dose more than 48 drops of alcohol. *A.*—No, I do not; because it does not interest me. I use so few of any of them that I cannot spend the time to look up such a question.

Q.—You have used cimicifuga, haven't you? *A.*—Very rarely.

Q.—That is the fluidextract? *A.*—Yes, sir.

Q.—Well, you know that each dose of that contains 57 drops of alcohol, don't you? *A.*—I do not know the exact amount of alcohol it contains, but it is a drug that is very rarely used. When it is used it is not usually used in more than 10 or 15 or 20 minim doses, because it is used in mixtures with other things. Therefore, while it may contain—

Q.—Doctor, would you talk a little louder. *A.*—Although it may contain therefore, more than 48 drops in a teaspoonful of it of the simple drug itself, it is usually used in less dosage than that in mixtures and not for any length of time.

Q.—Did you ever use the fluidextract of cinchona? *A.*—No, sir; I do not use it in that form?

Q.—In what form do you use it? *A.*—I usually use it in the form of a tincture.

Q.—How much alcohol is there in the tincture? *A.*—That has a high percentage.

Q.—That has a higher percentage than the fluidextract, hasn't it? *A.*—It has; I think it has.

Q.—In a dose of that, how many drops of the alcohol would a patient get? *A.*—Well, if you take a teaspoonful dose, I suppose he would get more than the 48 drops. I do not know exactly, but again that is not a drug that is used often. It is only used sometimes as a so-called stomachic tonic, that is, as a bitter tonic for a period and then usually not in its plain dose, but with other bitter tonics mixed up, and taken as a mixture. When we want long continued use for the effect of cinchona we use its active principle, quinin, which we can give in powder or capsule or pill having no alcohol whatever.

Q.—But quinin don't represent all the properties of cinchona, does it? *A.*—It represents the most valuable principle in it.

Q.—It represents a certain active principle only, don't it? *A.*—And the most valuable one.

Q.—Isn't there a difference in medical opinion on that subject? *A.*—Not at all.

Q.—You think not? *A.*—No, sir.

Q.—Why do they ever prescribe cinchona then, instead of just quinin? *A.*—Because of its price more than any other thing.

Q.—Its which? *A.*—Price.

Q.—You mean because it is cheaper? *A.*—It is very ineffectual in its effect, as compared with quinin.

Q.—Is there anything for which cinchona would be prescribed or used, for which quinin would not be used? *A.*—No, not that I know of. There is one exception I would make to that answer. Some people may have uncomfortable symptoms from quinin that are produced by it, like ringing in the ears, and occasionally it makes a hive-like eruption on the skin that is a peculiarity of some people in reference to quinin. In that event, often, as one cannot overcome it by any other medication, or combination with it, a less effective drug like cinchonidin may be given in its place, but the strength, the comparable strength is very different, but the effect is intended to be the same.

Q.—Now, when you give a drug which in one dose contains more than 48 drops of alcohol, does that one dose have any bad effect or any deleterious effect? *A.*—As a rule, I should say not.

Q.—Now, suppose you gave that three times a day, and the patient did not take it any more than three times a day, would the second or third dose have any deleterious effect? *A.*—I do not know. You are asking the question in so general a way that I cannot answer you definitely. It would depend on the patient.

Q.—Let us take a patient now in whom the 48 drops would be freely oxidized. The effect of that alcohol would have passed off before the expiration of three or four hours, would it not? *A.*—I cannot assume that. I cannot assume that any patient, or any individual, can take 48 drops of alcohol three or four times a day and say that it will be all oxidized or that it won't do any harm, I cannot say that.

Q.—Let us take one time only. You have given it more than one time, haven't you? *A.*—Yes.

Q.—Now, when you gave it one time, it did not have any bad effect, did it? *A.*—Not so far as I could say, but I do not know.

Q.—It did not produce an alcoholic habit, did it? *A.*—No.

Q.—It did not interfere with the action of the drug which you gave in it, did it? *A.*—I cannot conceive of answering that question. I don't give a drug of that kind once. If I am giving alcohol, I am giving it for a purpose.

Q.—You mean you are giving it more than once? *A.*—Yes, if I was going to give alcohol at all.

Q.—I am talking about what is going to be the effect of the first dose? *A.*—I don't know what the effect of the first dose is. I have tried to answer and say here that alcohol acts different on different individuals as to any evil effect or good effect or no effect at all, so far as one can see.

Q.—When you have given any of these drugs that I have just mentioned to you, and which you said you gave in alcohol, you did not give them for the alcoholic effect, did you? *A.*—No.

Q.—You regarded the alcohol as negligible, did you not? *A.*—I gave them because it is necessary to have preparations of drugs with alcohol to preserve the drug. We have them given to us by our pharmacological manufacturers and our druggists, who put them up for us in that form. We prescribe them in that form, disregardful usually of the alcohol in the amount which we give, excepting in that instance where if one prescribes the alcohol, you will be careful of how you are going to give it, just as you would be careful of any other habit forming drug.

Q.—That is, when you prescribe alcohol as alcohol. *A.*—No, I said these drugs containing alcohol. You would have the same thought in mind.

Q.—Well, you say that when a drug contains the alcohol which is indicated in the pharmacopeia, it would be regarded by the profession as negligible? *A.*—I cannot say what the profession might think.

Q.—Well, yourself then? *A.*—Well, myself, the way I prescribe it, I would say that it would be negligible.

Q.—When it came time to take the second dose, would there be in the patient's body any condition due to the alcohol alone? *A.*—I cannot answer that question, because I am not around. When I prescribe a drug that has got to be taken, it usually means for a day or two days or a week, and I am not around to see what the effect of that drug is on the patient every dose that he has taken.

Q.—Then you assume, as a matter of course, that where you give a drug containing alcohol in which there would be as much as 48 or more drops per dose, to be taken two or three times a day over a week, that the alcohol would not have any deleterious effect. *A.*—In the first place, I answer that by saying that I don't prescribe a drug that contains that amount of alcohol that I give a week at a time, and that if I did prescribe it, I probably would satisfy myself that it was not doing any harm on days subsequent to the day on which I prescribed it.

Q.—Well, now, when you give a drug that contains alcohol, do you have it in mind to go and see that patient very soon, and see if the alcohol is having any deleterious effect? *A.*—I don't take care of any patients, sir, except those that I see daily, except Sunday, and even Sunday—

Q.—Would you mind sort of spreading your voice out this way, half way between me and the jury, so that we can both hear? I did not hear the last. *A.*—All right, sir. My practice of medicine lies entirely, sir, at the Presbyterian Hospital in Chicago, and in consultation with other physicians and in opinions given in the office practice, a few hours a week. Consequently all patients that I have under my charge, I see practically every day.

Q.—But there was a time when you were in the general practice, like a country doctor. *A.*—No, I never was just like a country doctor.

Q.—I don't mean like a country doctor, but you would go around and see your patients? *A.*—I used to do a large family practice, sir.

Q.—Of course, then, you saw your patients daily? You did not see your patients daily then, as you do in the hospital, did you? *A.*—If they were very ill I did. If they were not very ill I sometimes would not see them once a week. But I am quite peculiar, if you will permit me to say that, in that I don't give very many drugs.

Q.—You mean that is now? *A.*—No sir, my patients, many of them, are carried through under a management which does not require the use of drugs often.

Q.—You mean you differ in that respect from the rank and file of doctors? *A.*—I do not know in what I differ from them; I do not know what the opinion or practice of some other men may be.

Q.—Then why did you say you were peculiar? *A.*—I am peculiar in the sense—you asked me the question whether I gave drugs every day, and whether I watched their effects every day, and if I had a family practice and did not see the patients I could not do it. I say that in many instances I did not give drugs always in such treatment.

Q.—Well, if all physicians do the same thing, you could not say you were peculiar in that respect? *A.*—Well, I will retract the "peculiar" if you want me to.

Q.—I think that is a good retraction. Did you give more drugs when you were in the general practice than since you have been in the hospital practice? *A.*—No.

Q.—When you first started to practice? *A.*—No.

Q.—You never gave any more at any time? *A.*—Perhaps when I was younger and without as much experience, I may have had a little more confidence in drugs or confidence in things I would read about drugs than I have now.

Q.—How long did that condition continue? *A.*—Oh, that is a developmental period you know, sir. I could not say. It has been thirty-six years since I began, thirty-five.

PUBERTY

Q.—Did I understand you to say that puberty as a rule is normal, and not pathological? *A.*—Yes sir, it is a normal physiological process.

Q.—Is it not a fact that amenorrhea is common in puberty? *A.*—No sir.

Q.—Did you say that you had heard Dr. J. Clarence Webster testify? *A.*—No sir.

Q.—Did you read his testimony? *A.*—I had that offered to me and read it.

Q.—Well, don't Dr. Clarence Webster say that amenorrhea is common in puberty? *A.*—I don't remember.

Mr. T. J. Scofield:—That question I object to. It don't make any difference whether he says it or not.

THE COURT:—The witness says he does not know.

Mr. T. J. Scofield:—But what is the use, your Honor? It is not a proper question.

THE COURT:—I do not think it is proper.

Mr. Hough:—What was that?

Mr. T. J. Scofield:—Your question, I say, was an improper question.

Mr. Hough:—He said he had read the testimony here, and he said he is associated with Clarence Webster.

THE COURT:—No, he said he had been in consultation with him. But what difference does it make? Dr. Billings has made his statement here and if Dr. Webster said something different, apparently they disagree. The Jury has heard it.

To which ruling of the Court the plaintiffs, etc., excepted.

Mr. Hough: *Q.*—Doctor, is your opinion on any subject ever affected by the opinion or influenced by the opinion of any other doctors? *A.*—Oh, sure.

Q.—Either expressed to you verbally or expressed in some book they wrote on the subject? *A.*—Expressed both ways.

Q.—Well, suppose Dr. J. Clarence Webster should say that amenorrhea is common in puberty. Would that affect your opinion on the subject?

Mr. T. J. Scofield:—That is objected to.

THE COURT:—He may answer.

To which ruling of the Court the defendants, etc., excepted.

A.—It would not affect my—my answer is based on my own experience. It does not affect it therefore.

AMENORRHEA

Mr. Hough: *Q.*—How many cases of girls at puberty have you had, would you say, roughly, for amenorrhea? *A.*—That would be difficult to answer. I could not answer that definitely.

Q.—Well, say in the last ten years? *A.*—In ten years I have not done family practice, and therefore I have not seen many, excepting as they would be admitted to the hospital. Before that, with a large family practice, helping parents to bring up their children, I saw many girls, and I have seen occasionally amenorrhea, but not a constant thing, and I want to repeat what I said, that when amenorrhea occurs at puberty, there is an underlying constitutional condition which prevents the development of puberty, and the word "amenorrhea" should not be used there at all.

Q.—What is that? *A.*—Its true function is gone.

Q.—You mean the term "amenorrhea" should not be applied to it? *A.*—Amenorrhea is but a symptom and not a condition with a girl. It is but a symptom of géneral conditions, as I reiterated this morning. The girl may have tuberculosis, the girl may have an anemia due to a faulty development of the blood, her bone marrow may not be acting right. She may have some other constitutional disease, which prevents the appearance of the menses. Every one is alarmed because

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it is amenorrhea in the girl, when the thing to be alarmed about is her general condition, and the amenorrhea don't mean anything. That a girl may be a little late in the development of puberty, or that she may be irregular at the beginning, is as a rule nothing to be considered as to drugs, but as to the correction of habits of life and diet and everything else.

Q.—Do you define amenorrhea and suppression as the same thing? *A.*—Yes, practically. They are the same thing. Amenorrhea means absence of menstruation. Suppression of menstruation means absence of menstruation.

Q.—Suppression means the absence after it has once been established. *A.*—No, it is simply another word to express the same thing. But amenorrhea covers the whole subject of the absence of menstruation.

Q.—Whether before the establishment or after the establishment of menstruation? *A.*—Before or after.

Q.—Within what time, as a rule, is menstruation established in young girls? *A.*—Oh, puberty differs in different people and different climates. Among the Orientals, it is early.

Q.—I don't mean at what age. I mean, is it established sometimes immediately right off, suddenly? *A.*—Sometimes it comes without symptoms at all, the girl menstruates.

Q.—That would be normal? *A.*—That would be normal. Sometimes it will come with more or less pain, dependent on the new function being established.

Q.—That would not be normal? *A.*—It would be in a sense the normal puberty, the normal menstruation.

Q.—Normal in the sense that she must menstruate? *A.*—Normal in the sense that she must menstruate, and normal in the sense that it is flowing and properly. That she may have pain don't indicate that she has got anything wrong about her pelvic organs.

Q.—It at least indicates that it is not normal, doesn't it? *A.*—It does not follow that the menstruation is not normal.

Q.—I don't mean the menstruation— *A.*—Or that the puberty is not normal. That don't follow at all. A girl, for instance, in our modern life is off at some boarding school and allowed to go into society too much at that early age, and her nervous apparatus is irritable with the congestion down here, although it is normal, that menstruation affects the nerves of her pelvis and she has got pain there when there is not anything the matter with her at all.

Q.—Garments and corsets would have some effect? *A.*—Regardless of everything, it don't make any difference. She has got pain because of her habits of life, and because she does not recognize things that she ought to recognize, and she has got pain because of a live battery up here (apparently indicating the head), which recognizes things that it ought not to recognize.

Q.—That is a condition that requires some sort of treatment, doesn't it? *A.*—It requires general treatment.

Q.—Tonic treatment? *A.*—To teach parents, for one thing, how to take care of their girls, and to teach the girls what to do. It doesn't necessarily mean medicine.

Q.—Not necessarily? *A.*—Not necessarily.

Q.—But you would not exclude medicine, if it was indicated? *A.*—If her condition indicated that she needed something to correct the condition when I found it, I would give the proper medicine.

Q.—And if anemia was one of those conditions— *A.*—Anemia was not there. The question was asked me here, if the girl had painful menstruation, but was menstruating. Now, if you bring in anemia again, she needs something to restore that blood.

Q.—Well, I am doing it now. When she is nervous and excitable, and has headaches, without having anemia, all due to the fact that she is not menstruating normally, you would not give her any medicine or treatment at all? *A.*—I cannot accept that statement. If her headache or backache was due to her nerves, or is due to the nervous condition—

Q.—But I thought you said that was the condition. The girl is at school; she is wearing tight clothes, going out into society, or she don't have the fresh air that she ought to have at that period, and she has this physiological condition, which you have just described? *A.*—The question which I understood to be asked by you was that the girl menstruated, but it was painful. I tried to say to you that the pain was not necessarily indicative of any disease about her genital organs; that she might well have pain with the natural congestion of the womb and ovaries at that period, which she would unduly feel because of her nervous irritability due to these extraneous things that I named.

Q.—Let us get our bearings again. Menstruation may be established suddenly, and without any pain. That is true, isn't it? *A.*—Yes sir.

Q.—When that occurs it is normal? That is the way it ought to occur in a state of nature, ought it not? *A.*—Yes.

Q.—Now, when it don't occur that way, there is a departure from the normal condition, without reference to whether it is yet pathological, it is a departure from the normal condition? *A.*—It is a departure from what would be considered the normal that would come in a perfect individual without pain.

Q.—Now, then, when it is delayed in that way, would you or would you not call it amenorrhea? *A.*—If it is delayed for the time being, no. Simply delayed menstruation.

Q.—Well, in what case would you call it amenorrhea? *A.*—When it goes on for month after month without the appearance of having had it, regularly month after month, suddenly a month drops out, and the menses did not appear, she had amenorrhea for that month.

Q.—Of course it is a recognized fact that it don't commence at the same age in every girl? *A.*—That is right.

Q.—But there is something to indicate in each girl when the time has come for her to menstruate? *A.*—Yes.

Q.—It is usually a little flow, isn't it? *A.*—No.

Q.—What is it? *A.*—Usually the development of the other organs of the female. The breasts enlarged and she rounds out in form, and her whole aspect is changed, and she passes from girlhood into womanhood.

Q.—Well, that would merely indicate that it was about the time? *A.*—And then when the menstruation appears, it may be the appearance first of a flow of blood, the first that she would know about it.

Q.—That would indicate the first month when it was due with her, wouldn't it? *A.*—On the other hand, it may even with a healthy girl appear—

Q.—Did the doctor answer that question?

(The pending question was then read.)

A.—That would indicate it, yes.

Q.—Go ahead, excuse the interruption. *A.*—It might be attended with more or less nervousness, irritability, headache or something of that kind, because it is a new thing to her, and Nature has not yet got around to establishing it.

Q.—Now then, suppose when the month comes around she is irritable in the meantime and has headache, would you say that it was then pathological? *A.*—No, not necessarily.

Q.—Would you say that it would then require any treatment at all? *A.*—Not unless I made an examination of that individual and found out what the true condition was.

Q.—Now then, suppose the third month comes around, and she is still in that condition, with some headache, would you give her any treatment? *A.*—I would not until I had acquainted myself with the facts of her condition.

Q.—Well, after you had acquainted yourself with the facts of her condition, what treatment would you give her? *A.*—Then I would give the treatment based on those conditions.

Q.—We will say now that it is the third month. What would be some of the treatment you would give her? *A.*—Well, it would depend on the cause. Sometimes they are delayed from general constitutional things. A girl may be housed in school or at home, and she may not have enough out-of-door exercise. On the other hand, she may be a poor girl earning her living in a store or somewhere else, and she is overworked and tired physically and mentally. She may have faulty methods of life, as to diet, and as to bowel movements, and one would have to ascertain all of those facts and treat the patient accordingly, rather than to drive at once at the pelvic organs to find what was the cause.

Q.—Would you wait three months to ascertain the facts? *A.*—I don't wait at all, sir, as a rule.

Q.—Then you would ascertain the fact before the expiration of three months? *A.*—I would try to, if the patient were under me, yes sir.

Q.—How long would you then wait before you would give her any medicine? *A.*—That would depend on what I found. I cannot answer the question, because you are assuming a hypothetical girl, without my knowing what the matter is with her. I cannot answer that question.

Q.—What conditions did you ever find in a girl at puberty which required the giving of medicine? *A.*—Anemia, such as I have named, is one of the most common causes. She either suffers from malnutrition because of faulty habits of eating, diet and exercise, and all that, or her blood making organs are not making blood fast enough, and in that event one corrects whatever the condition may be.

Q.—Let us suppose that the condition was not due to any malformation or any condition which required a surgical operation. *A.*—There is sometimes—

Q.—There is sometimes what? *A.*—A malformation.

Q.—Let us exclude those. Suppose the condition which you discovered her in was not due to malformation and was not one which required a surgical operation, and still the girl dribbled and had some pain and had headaches and was irritable and nervous. Is that a condition which calls for any treatment? *A.*—I have already answered that in saying that the underlying cause would have to be sought for and removed. Those may be numerous. I do not know what it may be.

Q.—Without reference to the underlying cause, could there be any underlying cause which would necessitate any treatment for that condition of symptoms? *A.*—I have already stated that I would give iron if she had anemia and needed a tonic, or give her some other restorative tonic if iron was not needed. If she had tuberculosis, we would treat that.

PREGNANCY

Q.—Is it not true that pregnancy in the civilization today is pathological rather than physiological? *A.*—No sir, only to a certain extent it is a pathological condition.

Q.—Is that based on your reading, or your own experience? *A.*—On my own experience and reading, and association with men whose practice is the care of women who are pregnant.

Q.—If Dr. DeLee should state that pregnancy should be regarded as a pathological condition, would it affect your opinion? *A.*—Yes—or no, I would not say it affected it. I believe that pregnancy is a normal physiological condition.

Q.—I say, suppose Dr. DeLee said in our present-day civilization that it should be regarded as a pathological condition? *A.*—Does he say that it usually is?

Q.—I say, suppose he said—I will read it to you if you want me to. *A.*—I say, does he say that it is usually a pathological condition?

Mr. T. J. Scofield:—That is objected to.

Mr. Hough:—He says it is.

A.—Does he say it is usually so? Then I differ with him.

Q.—You would differ with him? *A.*—Yes.

Q.—Now, have you had in your general practice, before you went into the hospital, many cases of pregnancy? A.—As they occurred in the families, I attended a good many.

Q.—That is where you had a family practice? A.—Yes.

Q.—How soon, as a rule, would the woman consult you? A.—Usually almost at once.

Q.—You mean as soon as she discovered that she was pregnant? A.—Yes sir.

Q.—Possibly to ascertain from you whether she was or was not pregnant? A.—Miss a menstrual period and usually want to find out if she was pregnant, or why she had missed it.

Q.—What do you do when a patient consults you under those circumstances? A.—When they did consult me under those circumstances, I usually examined them.

Q.—I mean, when they did. A.—I examined them to find out what the conditions were.

Q.—Were there any cases of pregnancy in which you ever gave medicine? A.—Yes, occasionally.

Q.—What were the circumstances, the conditions? A.—A woman would have disturbed functions. It is a common thing for a woman to be constipated; one would naturally attend to that in a woman in pregnancy. You always refer them to a diet. I said in pregnancy that one of the dangers from which a woman suffers is kidney disease, and so usually when I was a family physician I usually had the pregnant woman, or women, begin to send their urines to me and have them keep it up during the whole pregnancy, so that I could know what the conditions were and then anything that I found wrong with the urine I would correct. But there was not any specific thing that one would say that you could give to any pregnant woman. It is an individual equation.

Q.—What other medicines have you ever given in pregnancy? A.—Well, I have given iron. If I found a woman anemic, I would give iron. I have given them medicine to increase the urine outflow. I have given them medicines to palliate headache or backache that might be present, in the form of some palliative thing like salicylate of soda, some simple thing, as I have answered before. I cannot name any drug that I would say was specific, because the woman was pregnant.

Q.—Have you never had a case of morning sickness? A.—Oh, yes.

Q.—What do you give in those cases? A.—Well, it is a very difficult condition to handle. We usually try to give a general management, try to keep the woman quiet if her place in life would permit her to do so, on a light diet. Popcorn is one of the best remedies, and a little charcoal, one of the best remedies for a woman who has sour stomach and nausea when she is pregnant. There is not any specific medication for it.

The further hearing of the case was adjourned until 2:15 o'clock p. m. the same day, May 4, 1916.

Thursday, May 4, 1916, Afternoon

The court met pursuant to recess. Dr. Frank Billings resumed the stand as a witness in behalf of the defendants.

FURTHER CROSS-EXAMINATION BY MR. HOUGH

Q.—Do you give anything besides popcorn, doctor, in those conditions? A.—Yes, carbo lignum, charcoal and small doses, one drop doses, of carbolic acid in water, cinnamon water, any other simple thing.

Q.—I didn't hear that last. What was it? A.—Cinnamon water.

Q.—I have forgotten when you said you quit using viburnum prunifolium in your practice? A.—That I had quit?

Q.—Have you quit? A.—I said that I had used it last during the last year. I have therefore used it in recent time.

Q.—Have you made up your mind to quit? A.—No.

Q.—The last time you used it was on this woman from Texas? A.—Yes sir.

Q.—Whose patient did you say she was? A.—She was my patient.

Q.—Didn't she come to you from some other doctor? A.—I can't recall whether she came with a letter to the hospital or whether he sent her directly there without any word from him, but I have since corresponded with the doctor at her home concerning her. She has her physician there.

Q.—Well, what I meant was, did she have a physician before she came to you? A.—She was at one time in the Mercy Hospital under Dr. J. B. Murphy.

Q.—How long before she came to you? A.—She came to me first in July, 1914, and was under Dr. Murphy some time in 1913, from her account of herself.

Q.—That is, she had been under the care of Dr. Murphy here in Chicago? A.—At the Mercy Hospital.

Q.—And then she went back home to Texas? A.—Yes sir.

Q.—And then she came back to you? A.—Yes.

Q.—Now do you know whether she had any medical treatment in Texas between the two times? A.—Not from my own knowledge, no sir.

Q.—Did she tell you? Was it part of the history of her case? A.—I don't recall.

Q.—Do you recall what she told you about herself? A.—Excepting as to her general condition.

Q.—Well, did she tell you what treatment she had had previously? A.—She told me what treatment she had had in part. She said that about three years before she came to me, which would make it 1911, she had an acute rheumatism with inflammation of the tonsils, and the doctors in Texas had taken her tonsils out about three months after she recovered from the rheumatism.

Q.—That was in 1911? A.—Well, she stated—the general term was three years before. Then at Mercy Hospital in Chicago Dr. Murphy treated her joints with the injection of some material with the object of trying to cure the joints.

Q.—And how long was she here at that time? A.—I don't know that. Several weeks—perhaps two or three months.

Q.—And then she went back home? A.—Then she went—as I remember it she went back home and remained during the winter in Texas, and then came north and came into the Presbyterian Hospital in July, 1914.

Q.—Now, during all that period, or during any part of it, did she have any menstrual disturbance? A.—Her menstrual disturbance occurred beginning in 1913, I think. At any rate, she had it when she came to me.

Mr. Walker: Doctor, I think you mistook a date there. You said July, 1914. You meant 1915? A.—No, July, 1914, she came to me first.

Mr. Hough: Well, she had it in 1913, that is, when she went to Dr. Murphy? A.—I think she had it then. I am not certain, but she gave a description of her symptoms, that she had painful menstruation when she came to me.

Q.—Had she had any treatment for that at all? A.—That I don't know.

Q.—Now, was she cured when she went back after the first trip here? A.—No.

Q.—Did she take any treatment in Texas? A.—She took restorative tonics, iron, and at her periods, which were excessive, she was given ergot in the intervals.

Q.—That is in Texas? A.—That is in Texas. That is as I learned it from her.

Q.—Did she state she got any relief from those drugs? A.—She did not.

Q.—Did she state during what period of time they were given to her? A.—Usually during the menstrual period when she was overflowing, the iron being given between.

Q.—Being given a few days before and up to the time when it should occur? A.—She was given the iron in the interval between because she had poverty of blood, and she was given the ergot, as I understood it, a little before and during the period.

Q.—And did she continue that treatment until she came up to you? A.—I think so.

Q.—And when she came to you how long did you treat her for those conditions before operating? A.—She was under my management for her general condition, which you will recall was for general joint trouble, as well as for the anemia and for the pelvic condition, and the attempt was made to improve her general condition and to save her from operation, if possible, by tonics, by ergot, and at that time I tried the viburnum prunifolium.

Q.—How long was she kept on that treatment before the operation? A.—Well, as I recall it now, it was during about two periods, that is, beginning with one and running through and then over the other period. Not all of the time.

Q.—About six weeks? A.—Not all of the time. A part of the time leaving it off, and trying it again.

Q.—About six weeks? A.—Something like six weeks. But let me correct that. Not continuous six weeks. Trying it for the period until it ceased, and then letting her alone, and then giving it again when the flow began.

Q.—And did you give her no other medicine between the periods? A.—Iron.

Q.—Only iron? A.—Yes.

Q.—What other medicines besides the viburnum prunifolium did you give her? A.—I gave her ergot.

Q.—Anything else? A.—Not that I recall. No specific remedies applied to the hemorrhage.

Q.—Was the viburnum prunifolium in the fluidextract or tincture form. A.—In the fluidextract.

Q.—And the ergot, was that fluidextract or the tincture? A.—That was a neutral preparation, ergotol, a part of it, so that it could be given with a hypodermic syringe, and a part of it was the solid extract of ergot given by mouth.

Q.—Now for what period of time would you say you gave her the viburnum prunifolium? A.—Probably for seven or eight, possibly even ten days. I can't recall the exact time. While the excessive flow was going.

Q.—While the excessive flow was going; only through one period? A.—No, I then repeated it, as I recall, through a second period.

Q.—Were you giving any other medicine at the time you were giving her the viburnum? A.—I was giving her the ergot also, because the viburnum did not apparently control.

Q.—Well, you say the ergot did not control either? A.—Nothing controlled in the way of medicines.

Q.—How many doses, doctor, of the viburnum did you give? A.—Three, as I recall it.

Q.—And how much at a dose? A.—Twenty minims.

Q.—Twenty minims? A.—That is equivalent to about 20 drops; not quite.

Q.—And you didn't try increasing the dose? A.—No.

Q.—And you say you had given it for the previous period also? A.—I gave it, as I recall it, for two periods when she was flowing excessively.

Q.—Doctor, is there difference in the action of drugs when taken in small quantities during a long period of time as compared with large quantities over a short period? A.—Difference in effect?

Q.—Yes sir. A.—Yes, there may be some difference in effect.

Q.—Isn't viburnum prunifolium one of the drugs that is referred to as the kindlier drugs, which have to be given over a considerable period of time to get the effect? *A.*—I don't know.

Q.—Don't all the medical writers who recommend it make that statement? *A.*—I don't know.

Q.—You don't know. Now you say that you have heard from her. When did she go back to Texas? *A.*—Went back in September or October.

Q.—Of 1915? *A.*—1915.

Q.—And do you know what her condition is now? *A.*—She was in Chicago in April, two or three weeks ago.

Q.—And what was her condition then? *A.*—Excellent, excepting that she has some bony changes in joints, which are as irreparable as if she had been born with stiff fingers.

Q.—Is she under the care of a doctor now? *A.*—She has her own home physician, and I don't know whether she goes to him regularly now or not.

Q.—Would you mind giving us her name and address? *A.*—I can give you her name. I can't give you her address in Texas now. Her name is ——.

Q.—I mean privately. *A.*—Oh, privately.

Q.—Yes. *A.*—I can give you her name and let you know her address.

THE COURT:—All that is necessary is to supply it to Mr. Hough at your convenience, if you will do so.

"VICIOUS OR PERNICIOUS"

Mr. Hough: *Q.*—Doctor, why did you use the word "vicious" in connection with the recommending of Wine of Cardui during puberty and pregnancy?

Mr. Walker:—"Pernicious" I think he said.

Mr. Hough: *Q.*—Did you say "vicious" or "pernicious"? *A.*—In what connection?

Q.—I understood you to say that recommending the taking of Wine of Cardui during the establishment of the menstrual period, or during pregnancy, or during the menopause, I understood you to say was vicious.

Mr. Walker:—He said "pernicious."

A.—I think I used the word "vicious."

Mr. Hough:—Vicious? *A.*—I think I did.

Q.—I am a little hard of hearing, but that is what I thought. *A.*—Yes. And with the purpose in view of giving my opinion that any remedy that is ordered or advised for wholesale use during the puberty, during the period of puberty of young women, or during the menopause, is absolutely wrong, probably detrimental to the health of a lot of people, and therefore I would call it vicious.

Q.—Had any one suggested the use of the word "vicious" to you? *A.*—No sir.

Q.—You had read the article in THE JOURNAL? *A.*—No, I don't think I have seen that word.

Q.—You hadn't seen it. Well, now, was it vicious on—first, is the opinion that a thing is vicious a medical opinion or an ethical opinion? *A.*—Why, I would say an opinion as a humanitarian.

Q.—But not as a medical opinion? *A.*—As a medical opinion—as a qualified medical opinion, yes.

Q.—Now does that opinion presuppose that the drugs in the medicine are absolutely inert and worthless? *A.*—No.

Q.—Is that based on the opinion that the drugs have some potency? *A.*—I would be willing to assume that they had some potency.

Q.—Well, do you know whether those drugs in that quantity have potency or not? *A.*—In the hypothetical question it was stated that they were present in, as I understood it, amount to physiologic effects, but in a small dose, and I would say that the use of any remedies advised generally for the use of women suffering, whether in puberty or any other time—it don't make any difference what the drugs—I don't care what they are—is wrong.

Q.—Well, doctor, assuming that the hypothetical medicine is Wine of Cardui, have you an opinion whether or not it is a potent medicine, apart from the alcohol? *A.*—Upon the assumption included in the hypothetical question—

Q.—Either on that assumption or based on your own knowledge? *A.*—And it was stated in that hypothetical question that the drugs named in it were practically Wine of Cardui, as I understood it.

Q.—Well now, assume that they were Wine of Cardui. *A.*—And I was given to understand that the physiologic effect of those drugs, as named there were certain things—a certain sedative effect on the spinal cord from the viburnum; a certain sedative effect on the organs in the pelvis; that the other ingredient, the carduus benedictus, had a bitter principle, a certain bitter tonic principle. Therefore, as far as those things go, they have a medicinal effect.

Q.—What would be the medicinal effect of the hypothetical medicine? *A.*—Just what is stated in the hypothetical question.

Q.—Well, what would be the effect, so far as the medicine itself is concerned—and eliminating the alcohol as having any effect—on a woman who had amenorrhea? *A.*—I don't think it would have any.

Q.—On a woman who has menorrhagia? *A.*—I don't think it would have any.

Q.—On a woman that has metrorrhagia? *A.*—I don't think it would have any.

Q.—On a girl or a woman who has dysmenorrhea? *A.*—It is a possibility that, given enough of it, that it might have enough sedative effect on the spinal cord, and with the alcohol in it, to relieve the pain.

Q.—I am eliminating the alcohol, so far as the physiological effect is concerned. *A.*—As far as the physiological effect is concerned, it is assumed in that question that it had an effect on the spinal cord. The spinal cord is the path through which pains and other sensations pass to the brain, so that a woman may recognize them. If it had a sedative enough effect on the spinal cord to interrupt those impulses, or the knowledge of pain, it would relieve the pain.

Q.—Would it have any effect on a girl in puberty where the establishment of a menstrual period was with some difficulty. *A.*—I think not.

Q.—And suppose she had pain in connection with the establishment of the period? *A.*—The same answer would apply to a dysmenorrhea or painful menstruation, that it is possible that the drug named, having a sedative effect on the spinal cord, might palliate pain.

Q.—Now is your opinion with reference to the bad effect of giving it at such time based on the effect which you expected the medicine to exert apart from the alcohol, or based on the effect which you understood or thought the alcohol itself would effect or have? *A.*—First of all, I would consider that the alcohol given in that amount to a young girl right along would be harmful, at least with certain individuals, as I explained about the use of alcohol. If used over a long time in puberty, which may be a long period in a girl's life, it may extend from the quick establishment of it to the development over three or four years of time before that girl is rounded out into her full womanhood, and during that period she might be irregular, and to take that amount of alcohol steadily over a long period of time might establish a habit of alcoholism. And certainly in the amount given one cannot say how much irritant effect that would have on the tissues of that girl's body to do her harm. As far as the other medicinal ingredients are concerned—that is a part of the question—I don't think they would have any effect in establishing menstruation.

Q.—Would it have any effect on her at all? *A.*—It might have some sedative effect, as I have explained.

Q.—Would it have any deleterious effect on her at all? *A.*—That I can't answer. I would say this, that any drugging, it don't make any difference if the remedies were not potent, were not harmful—to think of an individual taking the drugs along three or four times a day week after week and month after month, as would be necessary in certain conditions of the development of a girl, would be harmful. A bad habit established; looking to drugs for help, even when they had no effect at all.

Q.—Well, if they were inert, it would be no more harm than taking water? *A.*—No, but it would be taking drugs just the same.

Q.—You mean so far as name is concerned? *A.*—It is a bad habit.

Q.—Well, would there be any other physiological effect, except the habit of taking something which was called a drug? *A.*—I can only assume the physiologic effect named in the question, and if the drugs have that effect, they would continue to have that effect physiologically.

Q.—You mean the sedative effect? *A.*—The sedative effect, unless long continued use of it, habitual use of it, it would finally lose that effect, not react on the individual who was taking it.

Q.—Now which do you think is the greatest danger to the girl, the effect of the drug that is in the hypothetical medicine, or the effect of the alcohol in which it is given? *A.*—I think the alcohol would be the more harmful thing, but as the two were given together, that was beside the question. That is, they are given together, and any harmful effect must be the total bad effect of the whole thing.

Q.—Well, now, neither carduus benedictus nor viburnum prunifolium is regarded as a habit-forming drug? *A.*—No.

Q.—So that if there is no deleterious effect from the alcohol there would not be any serious, objectionable or deleterious effect in giving the medicine, would there? *A.*—Yes, but there will be an ill effect from the alcohol.

Q.—From 48 drops in five times that amount of water three times a day? *A.*—Given indiscriminately and over—

Q.—Well, I am asking, taking it just three times a day for five days, and then stop. *A.*—Probably not.

Q.—And then if it was given at the next period three times a day for five days, and then stopped, would there be any deleterious effect? *A.*—I think not. Maybe or may not. But—

Mr. Hough:—That is all. Thank you.

REDIRECT-EXAMINATION BY MR. T. J. SCOFIELD

Q.—Doctor, just one or two questions. Now in speaking of the effect of viburnum prunifolium and carduus benedictus in this medicine, Mr. Hough asked you as to its sedative effect. The hypothetical question which I put to you concedes a sedative effect when the medicine is given in from 30 to 60 grains or a full dose. Now when you answered as to the sedative effect you had reference to the full doses, I assume, did you? *A.*—I did.

Q.—Yes, sir. And not to the amount of the medicine, approximately 3 grains, contained in the hypothetical question? Is that right, doctor? *A.*—That is right.

Q.—Now if 30 to 60 grains was required in order to produce a sedative effect, would there be any sedative effect—how much of a sedative effect do you think there would be if taken in the extractives from 3 grains? *A.*—There may be a sedative effect proportional to the dose, of course.

Q.—Doctor, Mr. Hough has asked you if a medicine which contains carduus benedictus contained extractives other than cnicin which were active on the womb, whether or not it might be effective. And you answered that in the affirmative. Now, doctor, assume, without knowing what those other extractives might be, assume, doctor, that a woman's abdomen should be opened, and her uterus should be exposed—

Mr. Hough:—I object to this as improper cross. That is direct examination.

THE COURT:—Let him finish the question, Mr. Hough.

Mr. Hough:—All right. I know what he is going to say.

THE COURT:—Yes. Let him finish.

Mr. Hough:—All right, finish the question.

Mr. T. J. Scofield:—Shall I go ahead with the witness, your Honor?

THE COURT:—You may ask the question for the record, but it is not redirect-examination. It does not cover anything that the cross-examination brought out.

Mr. T. J. Scofield:—I think it is, if the Court please.

THE COURT:—Let him ask the question.

Mr. T. J. Scofield:—And I will state why.

THE COURT:—Finish your question.

Mr. T. J. Scofield:—I will finish the question.

Q. (continuing)—And there should be injected into the uterus 45 grains of this preparation containing the extractives that Mr. Hough interrogated you concerning, and that as a result of the injection of that quantity of the solution into the uterus there was not, within the space of ten minutes, any action of contraction or relaxation whatever. Now what would you say as to whether or not the extractives of cnicus benedictus was a tonic, or produced a tonic effect on the uterus?

Mr. Hough:—Now that is objected to.

THE COURT:—I will let him answer on the theory that it was overlooked on the direct examination.

Mr. Hough:—Very well. Very well.

Mr. T. J. Scofield:—We didn't ask him anything about cnicus benedictus.

Mr. Hough:—If it was overlooked, let him answer.

Mr. T. J. Scofield: Q.—Answer the question, doctor. A.—I should say that would indicate that the extractives, or that the virtues of the medicine were not tonic, would not contract the uterus and would not contract the blood vessels.

Q.—Well, suppose that under similar circumstances there was nothing to indicate any sedative effect on the uterus. A.—Inasmuch as I understood in the question that no relaxation occurred, that would indicate that there was no sedative effect.

Q.—Now, doctor, Mr. Hough also asked you about the condition of pregnancy, and as to whether or not it was a pathological condition, or frequently so, and he also asked you whether or not your own opinion would be influenced on that proposition by the opinion of others. Now what have you to say about that, explaining fully your views on that subject? A.—I said before that I considered pregnancy a physiologic, normal condition. That there were a few exceptions, anywhere from 4 to 10 per cent., in which women developed some disease as a result of pregnancy, and I named Bright's disease, the wrong implantation of the after-birth, and other things. Now there are other conditions that occur that perhaps would make one state that pregnancy was an abnormal condition, or had symptoms connected with it; that is due to the fact that the woman before she became pregnant, and while she is pregnant, is suffering from a constitutional disease. A woman can suffer from tuberculosis, from malaria, from hookworm disease, from typhoid fever, from other things while she is pregnant, and even with these more chronic things like malaria and hookworm disease and tuberculosis which have existed for months, perhaps years before she became pregnant. Now she is an ill woman. She is bodily ill; she is suffering from malaria. She is suffering from hookworm disease. She is suffering from tuberculosis. And she doesn't feel well while she is pregnant, and she may have some abnormal things develop in that pregnancy because she, herself, is not well. Now that occurs to a large extent in some parts of our country. Those who have been qualified to make the surveys show that there is about 21 per cent. of malaria carriers in the south in Tennessee, and in Mississippi, Louisiana and Texas, and through the malarial districts; 20 per cent. of the population are malarial carriers. In Kentucky and in the South beyond that there are something like 30, 33 to 35 per cent. of hookworm sufferers among women and men. You know how prevalent tuberculosis is with us everywhere. And women have those diseases as well as men, and the women become pregnant while they are in that condition. Now that is not a pathological pregnancy, that is a pathological individual who has become pregnant, and suffers in consequence. And the remedy given for any symptoms that she suffers from during that pregnancy has got to be applied to the condition which makes her ill while she is pregnant. She will remain ill as long as she carries hookworm; she will remain ill as long as she has got malaria; she will be more or less ill during her pregnancy if she suffers from tuberculosis, which you cannot remove.

Mr. T. J. Scofield:—I think that is all, doctor.

RECROSS-EXAMINATION BY MR. HOUGH

Q.—Doctor, while pregnancy, of course, is not a pathological condition, most women who are pregnant have a pathological condition, don't they? A.—You asked me that question, sir, and asked me if it was not usually a pathological condition.

Q.—Well, but I didn't mean to indicate that pregnancy itself was a pathological condition. A.—I so understood it.

Q.—No, I mean whether the woman has not usually a pathological condition while she is pregnant? A.—No.

Q.—Never? A.—Oh, I have already answered that, that in certain places in the country there are 20 to 33 per cent. of the women that are probably ill, but in our great Northwest and through here, with the 9,000,000 nearly of farmers all over this country, the women bear and they do not need a doctor half of the time.

Q.—Of course in that condition it would not be pathological? A.—Naturally it is not pathological.

Q.—Now, in referring to that district, isn't all you could say about that, that that medicine did not act in that case? That would not prove that that medicine would not act in any case, would it? A.—Not at all.

Mr. Hough:—That is all.

Mr. T. J. Scofield:—That is all.

THE COURT: Q.—Dr. Billings, you said with reference to reaching the age of puberty that if the menstrual flow established itself at once it was normal. Now do you mean by that that in an instant, or over night the girl becomes a normal, grown woman, or does it begin with the small flow, increasing as the period goes on, and gradually becoming normal? And over what time would you regard the maturity of the girl established, generally speaking? A.—Generally speaking, we speak of puberty as a period when the girl changes to womanhood. In some girls that may be rapid, in the change. A girl takes on all of the characteristics of a woman in her breasts, and menstruates, menstruates regularly. It is normal for that girl.

Mr. Hough:—You mean right from the start?

THE COURT:—What I wanted was—

The Witness:—Now the other girl, just as healthy as that one, will take one year, two years, three years for that womanly development. It is an individual characteristic. It is a familiar characteristic. She may menstruate in that two or three years a half a dozen times; she may menstruate twenty times; she may menstruate regularly. It doesn't make any difference. If she is normal she may have that whole period of development. Now she may have at any time pain, as I have explained to you, because of certain general conditions, because of her environment, of her parentage, of what her surroundings are at home, and what she is doing. We have girls go out here at early puberty, working as cash girls in stores; they are working their heads off, they get bad air, they do not get the proper rest; they may have pain, but that girl is a normal girl. It may be she has got no menstruation, but she is just as normal as the girl that lives on Lake Shore Drive.

THE COURT:—What I wanted to get at was whether your experience would give any average time from the beginning of the change to the end, the normal beginning to the normal end? A.—The normal end of menstruation?

THE COURT:—No, the change. A.—One can only say that it may—

Mr. Hough:—I think the Court means the establishment of menstruation.

THE COURT:—Yes.

The Witness:—Yes. That may be anywhere from two or three months, or a month, as we would say that begin suddenly, or two or three years or four years. That is the state of puberty, and the menstrual period is not necessarily an index that that girl's sexual organs are not developing properly. That girl, getting married even in that state of puberty, when she may be irregular, is able to conceive although she is not menstruating.

Mr. Hough: Q.—But the normal condition, doctor, in a state of nature, means that as soon as a girl starts to menstruate she menstruates completely? A.—Yes, but when you say normal you can hardly use the word as a unit to compare everybody with. There are people that say that none of us are normal mentally, not one of us. That we do not find the perfect individual. So when you say a normal menstruating girl, a girl at puberty, who are you going to set up for the normal?

NUBILITY

Mr. Hough: Q.—Just before you get off the stand, doctor, will you explain to the jury the difference between puberty and nubility? A.—And what?

Q.—The difference between puberty and nubility? A.—I don't get your last word.

Q.—Nubility. A.—Nubility?

Q.—N-u-b-i-l-i-t-y? A.—Nubility; you've got me.

TESTIMONY OF DR. H. L. APPLETON

Dr. H. L. Appleton was called as a witness for the defendants.

DIRECT EXAMINATION BY MR. LOESCH

Dr. H. L. Appleton testified that he resides in Gadsden, Ala., and has been a practicing physician for about twenty-four years. He graduated from Vanderbilt University in 1892. He went to Cedar Bluff, Ala., where he practiced eight years, then to Center, Ala., and next to Gadsden. He is familiar with the use of Wine of Cardui. The first case which he described was that of Mrs. A.

A.—Mistress A.; age 26, married, one child. The family history negative. She called on me in the spring of 1909 for consultation. I asked for an examination, after going over her family history, and she refused, but returned, and the examination was made the next day, as I remember it. I found a mass in the lower abdomen which seemed to be about the size of a pint, or between a pint and a quart cup. She was complaining of headache, pain in her back and legs, and scanty menstruation. After getting the history as carefully as I could I advised an operation, which was refused, and she returned to her mountain home, which was about 18 miles from our town. In the fall of the same year I got a phone message to go out on Alabama street, and I found it was the same patient. Her condition was worse. I found her in bed. She claimed to have had a chill, but I found no temperature. I went over the case carefully, and made the bimanual examination. I found the mass had grown larger and her condition was worse. I asked her why she had not returned sooner, and she

said that she had been advised by her friends, and reading of advertisements, to try Wine of Cardui for her relief. She did so as directed on the bottle. She kept it up until I was called in. I asked her if it had done her any good. She said she did not think so because she had grown worse, as she thought, all the while. I again advised the operation, which she consented to after consulting her family, and removed a dermoid cyst—to my recollection it was from the right ovary, the right side, and a part of the left ovary was left. I removed the tube and part of the left ovary. To-day, as far as I know, she is alive and well.

Mr. Loesch: Q.—How long was it between the time of the operation and the preceding time that you had seen her? A.—I don't quite understand you.

Q.—How long a time had elapsed between the time you saw her when the operation was performed, and the preceding time? A.—To my recollection it was just about five months.

Q.—About five months? A.—Yes, sir.

Q.—And during that time she stated she had used Wine of Cardui? A.—She had used Wine of Cardui.

Q.—Did the history indicate that she had used it previous to that time? A.—She gave no history of that time; just between those times.

Q.—Was the dermoid cyst that you removed similar to the one that Dr. McKenna showed here? A.—There was no bone in mine. I don't remember whether he showed—

Q.—There was no bone in yours? A.—No, mine was just a brown, curly hair—a whisp.

Q.—What is your next case, doctor? A.—Number 2, a girl 13—she gave her age from 13 to 15. She was not positive, nor neither was her mother, as to her age. She was the daughter of what we call a woodchopper.

Q.—A woodchopper. A.—Yes, sir; a woodchopper, and making my rounds I was called in to see her in a convulsion. I relieved the convulsion as readily as I could, and made an examination and found her with a high temperature, quick pulse, and very tender over the abdomen. I asked her for an examination, bimanual examination, which was consented to, and I found an imperforated hymen. I punctured that and I suppose there was about a pint of pus, or a fluid with a very bad odor to it, about the consistency—it looked like coffee grounds, something to that effect, as near as I can state. I found after passing my finger in, following up the canal as far as I could, that it was a contracted canal of the vagina. I dilated that with what is known as a vaginal speculum, or virgin speculum; washed it out with a normal salt solution, hot water, and left some bromid with instructions for her to be brought to town for further treatment as early as possible. She gave a history of never having menstruated, having had pains for two or three years, from, as her mother expressed, the blood flowing to her head, and that was what she laid to the cause of the convulsions. And I asked her what she had been doing, and she said he had been using, among other things, Wine of Cardui. I asked her for how long. She said for some—about eighteen months. And I asked her how long it had been since she took the last of it; if she had a bottle of it in the house. No, she said she hadn't had any, she said she had got a bottle of Wine of Cardui that her husband traded a rattlesnake for. And I suppose that was about two months before that he was in town.

It was brought out that the father of the patient traded a rattlesnake for a bottle of Wine of Cardui.

The next patient was Mrs. S.

A.—Mistress S. told me to see her in a case of hemorrhage, she was having a severe hemorrhage. She was nervous, anemic, yellow in color, cast, and upon a bimanual examination I found the vagina almost filled with a cauliflower formation. The odor was very bad. She was suffering with pains in the head and back, her extremities and the lower bowel. I advised an operation, and the family refused. She passed from under my care, and about four or five months later I was called back to the same patient at the same place, for the treatment for the controlling of another hemorrhage which was more profuse than the one previous. I still insisted on the operation, and asked her why she had not had something done sooner. I told the family that she was beyond my reach, as I considered it. She said that she had relied on the use of Wine of Cardui to relieve the symptom that she complained of, so she had taken it according to the directions on the bottles, for two or three bottles, I don't remember just which, and then increased it, but got no results. They consented to consultation, and she was carried to Birmingham, to the South Highland Infirmary, and what is known as the ——— operation was done by Dr. Prince at Birmingham. As far as I know she is alive to-day. We only promised her from one to three years of relief.

This patient was operated on later in the same year. The next patient was Mrs. B.

A.—Mistress B.; aged 30, married. Called to see her in 1914. Found her in bed, pale, nervous, severe cough, complained of headache, scanty menstruation, had occasionally high temperature, had a hectic flush. When asking for an examination she refused. She said that she did not send for me to treat her medicinally. She only wanted me to treat her for the Wine of Cardui—for laudanum habit which she had gotten into. She asked me to keep—she said her husband knew nothing of her condition, and did not want him to know, and she knew she could not live long, and wanted to die sober. I told her I would do the best I could for her. I put her on treatment, and advised her to leave off the laudanum and the Wine of Cardui, which she promised to do, and she went on and died.

Q.—Now, did she state to you how long she had been using the Wine of Cardui? A.—About a year and a half.

Q.—Did she state how long she had been using it before she used the laudanum with it? A.—No, sir; she was trying to reduce the Wine of Cardui, that is how come it she got into the habit of laudanum.

Q.—She claimed she reduced to one bottle a week with the use of the laudanum? A.—Yes. I asked her how she managed to get it. She said it was bought by a neighbor for her.

Q.—What year was that, doctor? A.—That was in 1912-1913. That was in an adjoining county.

The witness testified that his driver, a man named W. N., would drink Wine of Cardui as a beverage when he could not get whisky. A woman named S. H. he also saw drink Wine of Cardui as a beverage. He also saw a young man named W. W. drink Wine of Cardui as a beverage.

Mr. Loesch: Q.—What year was that? A.—That was 1906. He came in the drug store and asked for a bottle of Peruna. I told him I didn't have it. Then he asked for alcohol, and I told him I couldn't let him have it, as he was a chronic alcohol—

Mr. Walker:—I object to that.

THE COURT:—Yes, strike that out. What we want to know is, did you see him drink the Cardui.

Mr. Loesch: Q.—Yes.

THE COURT:—Strike out everything after he said he came into the drug store.

The Witness:—He split a bottle with a friend of his, and they drank it there, in the drug store; and I have another case, Mr. P——, a painter.

He also saw S. P. drink Wine of Cardui out of the bottle.

CROSS-EXAMINATION BY MR. WALKER

The witness testified that he left Alabama on the 27th day of March, that he has been in Southern Illinois part of the time, and that he went to Southern Illinois at his own expense.

Mr. Walker: Q.—Do you know how you were found to have any information?

THE COURT: Q.—How did you happen to come up here, that is what we want to know.

The Witness:—Well, Judge, I bought a ticket and came up on the—

THE COURT:—How did you happen to come. A.—I came as a witness for the American Medical Association.

THE COURT:—We want to know who asked you, and what were the circumstances.

The Witness: A.—Well, I got a letter from Dr. Heizer.

THE COURT:—I want facts.

The Witness: A.—I paid no attention to the first letter, and I got the second one asking me to meet him at the Detweiler Hotel in Birmingham, Alabama.

Q.—Yes. Do you know how Mr. Heizer got your name? A.—I do not.

Q.—Or how he happened to write to you? A.—I do not.

Q.—Have you got a copy of the letter that he wrote you, the first time, with you? A.—No, sir; unfortunately my grip was went into, and I lost it.

Q.—Was Heizer with you on that occasion? A.—No, sir; there was nobody with me when it was done.

Q.—When did you get the second letter from Mr. Heizer? A.—It was some time in '14, or—

Q.—What? A.—Some time in 1915. I don't remember the exact date.

Q.—Can you give us the date when you got the first one? A.—No, sir; I didn't pay any attention to the first one.

Q.—You didn't pay any attention to that one? A.—I beg your pardon?

Q.—How much time elapsed between that one and the second letter? A.—I couldn't tell you.

Q.—Where did you first meet him? A.—I met him at Birmingham, the Detweiler Hotel.

Q.—Did you go there in response to the letter? A.—My recollection is he asked me to meet him at my office, or in Birmingham, and I replied—I think it was by wire though—I replied that I had to be in Birmingham, and I would meet him there.

Q.—Now then, did you give him, on that occasion in Birmingham, these names that you have testified about here? A.—No, sir.

Q.—Of these persons? A.—No, sir; not all of them.

Q.—Did you give any of them? A.—Part of them.

Q.—Were you then asked by him to look up other cases where people had drank Wine of Cardui? A.—I was not.

Q.—Do you know Dr. Goddard? A.—Dr. who?

Q.—Dr. Goddard. A.—I know of him.

Q.—You and Dr. Goddard had been together while you have been in town? A.—Considerably so, yes, sir.

Q.—And at the same hotel? A.—Yes, sir; under the supervision of a detective most of the time I think.

Q.—Yes?

Mr. Loesch:—And pursued by detectives most of the time?

A.—Under the supervision.

Mr. Walker:—I don't wonder that they had you watched.

The Witness:—I am not sure—

Mr. Loesch:—It is about time that the jury finds out they are all watched.

Mr. Walker:—I don't know why you should hire men to watch your witnesses, but I am sure that you may if you want to.

Mr. Loesch:—I don't know who is doing it, but I know we are all watched. And I know that I am not having myself watched.

The Witness:—It was not at my solicitation that I was watched.

Mr. Loesch:—It is not at my solicitation that I am being watched, either.

Mr. Walker:—It might be better if you would do that.

Mr. Loesch:—It might be, that might very well be.

Mr. Walker:—Now I apologize for their putting detectives on to you.

The Witness:—Oh, there is no apology necessary at all.

The witness was then cross-examined concerning S. P. He stated that S. P. drank part of the contents of the bottle and put the bottle in his pocket the first time the witness saw him drink it. He testified that he sold to S. P. a part of the Wine of Cardui which the latter drank. He was cross-examined concerning each occasion when S. P. drank Wine of Cardui. The witness testified that he himself has not drunk Wine of Cardui, but he is not a prohibitionist.

The witness testified that S. H., W. W., S. P. and W. N. are all dead.

Q.—W. N.—the driver that drove for you? The man that used to stop the rig and get out and take a drink when he was driving you, who would stop and get out and take a drink of Wine of Cardui, and then get in and drive you to the next place. *A.*—He never had a family, so far as I know.

Q.—Didn't he use to take a bottle of Cardui, when he was driving, and take a drink, and then go a little further along with you, and then take another drink of Cardui out of his bottle? *A.*—Yes, sir.

Q.—Did he drive you every day? *A.*—No, not every day.

Q.—Over how many years did W. work for you? *A.*—Two years.

Q.—Two years? *A.*—Yes, sir.

Q.—Was it a buggy or a horse or an automobile that he drove? *A.*—Well, sometimes one horse and sometimes two horses.

Q.—Would he drink more Cardui when he was driving two horses than he did when he drove one? *A.*—Well, I did not take any notice of that.

Q.—Well, did you sell W. N. this Cardui? *A.*—I beg your pardon?

Q.—Did you sell him the Cardui? *A.*—No, sir.

Q.—Did he use to get it from your drug store? *A.*—Sometimes. Sometimes in the country store.

Q.—Stop on the way, when you were driving somewhere? *A.*—Yes, sir.

Q.—And get out and get a bottle? *A.*—Yes, sir.

Q.—And come back and get in and drive you along again? *A.*—That is correct.

Q.—Didn't you make any objection to his buying the Cardui from the country drug store, instead of buying it at yours? *A.*—I did not.

Q.—Where was your store when W. N. was alive? *A.*—It was at Cedar Bluff, Alabama.

Q.—The same place, Cedar Bluff? *A.*—Yes.

Q.—Did he die while he was still in your employ? *A.*—No, sir.

Q.—How long after he quit you did he die? *A.*—I could not tell you.

Q.—When did you last hear of him? *A.*—Oh, 19—, somewhere in 1900.

Q.—Where was he then? *A.*—He was at Cedar Bluff.

Q.—The same place? *A.*—Yes, sir.

Q.—Was he married or single? *A.*—He was single.

Q.—Now, your first experience, as I remember it, ever seeing anybody drink it, was in 1894.

Mr. Hough:—'93.

Mr. Walker:—'93 the first? Is that right? *A.*—That is right, 1893.

Q.—W. N. was the first one? *A.*—Yes.

Q.—Now, that is 23 years ago. Well, will you name any human being in any place that you have ever lived in the last 23 years that you ever saw take Cardui as a beverage, that is, alive, or who has a relative alive, that you can tell us of; and give us his name and address? *A.*—I don't know that I can.

Q.—These four dead ones are all that you ever saw drink it, are they not? These four dead ones are all you ever saw take it? *A.*—All I call to mind just now.

Q.—Is your compensation here in Chicago based at all on the number of dead ones you can testify about?

Mr. Loesch:—I object to that.

Mr. Walker:—I am just asking him if it is a fact.

Mr. T. J. Scofield:—That is not a proper question.

THE COURT:—That is not the way to get at it, Mr. Walker.

Mr. Walker:—All right.

Mr. Loesch:—If you want to make fun of it, that is a little different.

Mr. Walker:—He is not at all amusing to me.

Mr. Loesch:—It must be very amusing.

The witness then stated that he would give to the attorneys for the plaintiff the names of the women to whom he referred, also the names of their husbands and addresses, so far as he is able. He was then cross-examined concerning the case of Mrs. A. and the case of the woodchopper's daughter. He answered in detail questions concerning the various examinations and the pathologic conditions found in these cases. He also gave the names of the physicians who performed the operations on these cases.

The witness was then questioned in detail concerning the case of Mrs. B. He gave her strychnin as a tonic and advised a diet. This patient had tuberculosis but did not wish to be cured of the tuberculosis; she wanted to be cured of the laudanum and Wine of Cardui habit. The witness last saw her husband in 1913.

TESTIMONY OF DR. JAMES W. FENNELL

Dr. James W. Fennell was called as a witness on behalf of the defendants.

DIRECT EXAMINATION BY MR. LOESCH

Dr. James W. Fennell testified that he is a physician residing in Landersville, Ala. He graduated from Birmingham Medical College in 1901, and has been practicing in Landersville since that time. He was called to see a Mrs. E. W. at night and found that she had taken about two thirds of a bottle of Wine of Cardui. The patient feared a miscarriage. She had been taking the Wine of Cardui for three or four weeks off and on and that day had secured a fresh bottle, of which she had taken about two thirds. He stated that she was disgustingly drunk. She was a woman about 25 or 26 years of age. He treated her in 1906.

Another case was that of Mrs. B. He examined her and found that she was pale and anemic. She gave a history of amenorrhea, for which she had been taking Wine of Cardui. She had had a miscarriage the year before and had been attended by an old negro woman. The abdomen was distended similar to the condition in pregnancy. On examination he found the cervix completely closed. He called consultation, the cervix was opened up and perhaps a gallon of an offensive semifluid mass passed off. The patient promptly recovered. This case was seen in 1907. The patient had been using Wine of Cardui five or six months.

Dr. Fennell was called in consultation to see Mrs. S., who had been suffering with pelvic pains for nearly a year, and had been taking Wine of Cardui without improvement. Her family physician told her she had cancer. On examination Dr. Fennell found she had cancer, which was too far advanced for operation. The patient was a woman between 45 and 50 years of age. She had children and grandchildren. The patient died. This case was seen in 1910.

Mrs. J. H. consulted Dr. Fennell in 1902. She was about three months pregnant and had had four miscarriages previous to that time. The previous pregnancies had not gone longer than the fifth month. The patient had been taking Wine of Cardui each time. Dr. Fennell forbade the Wine of Cardui, put the patient under treatment, and she went the full term, and has had four or five children since that time. The patient stated that she had used the Wine of Cardui to prevent miscarriages.

The witness was called to see Mrs. P. B., who suffered with profuse menstruation and hemorrhages. She was weak and had been taking Wine of Cardui for five or six months without relief. On examination he found that she had pellagra from which she died in an insane asylum. She was about 27 years of age, and had been using Wine of Cardui for five or six months.

Miss M. F. was an orphan girl 27 years of age, suffering with amenorrhea, who had been taking Wine of Cardui off and on for years. She took it when she could get money to buy it. She was pale and anemic. On examination he dis-

covered she had hookworm, for which she was treated and recovered.

Mrs. A. L. B. he saw in 1912. She had profuse menstruation with hemorrhages. On one occasion when she fainted Dr. Fennell was called. She had been taking Wine of Cardui to correct this condition for seven or eight months. Dr. Fennell stopped the Wine of Cardui and the patient recovered under treatment.

The next case was Mrs. C. F. She was having convulsions when Dr. Fennell was called. Labor had started and the convulsions were those of puerperal eclampsia. The feet and legs of the patient were swollen. He found that she had been taking Wine of Cardui. On examination of the urine it was found to contain albumin. Dr. Fennell and another physician treated the patient for several days. She became well. The mother and baby both lived. She had been taking Wine of Cardui about six months.

Mrs. H. S., 38 years old, also had puerperal eclampsia convulsions, albuminorrhea and swelling of the feet and limbs. Dr. Fennell saw her in 1903, at the termination of the pregnancy. The patient was saved, but the child died. It had been dead for two or three days, according to the opinion of the physicians.

Mrs. B. C., a colored woman, Dr. Fennell saw in 1910. She had been suffering with convulsions due to eclampsia. She had been taking Wine of Cardui for four or five months. Both mother and baby recovered under treatment.

Dr. Fennell was then asked to describe any cases in his knowledge in which Wine of Cardui had been used as a beverage. In 1904 a man brought his wife to consult Dr. Fennell. They gave the history that she had been suffering with a run down feeling. She decided she had female trouble and had taken Wine of Cardui. At first it seemed to help or relieve her. Later she doubled the dose and finally began to take a third of a bottle at a dose twice a day.

Mr. Loesch: Q.—Did she come to you for treatment for alcoholism? A.—She did not know what it was. Yes, she came to me for treatment for whatever was in that Wine of Cardui.

Q.—That is it. Now, tell what you did there. A.—And she stated after she got her dose that morning, she and her husband were going to church, and she was not able to go, but he told her they would stop up here and see if they could get a tonic. She got there, and opened the bottle, and took two or three doses before it had the desired effect. And then it had such an exhilarating effect it made her so talkative that it aroused her husband's curiosity, and they got talking over it, and they decided—

Mr. Walker:—She was telling you this, the woman, or her husband.

The Witness:—Her and her husband—and decided she had formed a habit, and brought her to me to treat her for it.

Mr. Loesch: Q.—What did you do? A.—I stopped the Wine of Cardui, and gave her some sedatives and bromids.

Dr. Fennell stated that at one time he saw several men drink Wine of Cardui in back of a store.

CROSS-EXAMINATION BY MR. WALKER

On cross-examination the witness gave the names of several of the persons whom he saw drinking Wine of Cardui behind the store as well as other persons.

The witness stated that his father and mother also saw the men drinking the Wine of Cardui. He keeps some drugs, but does not conduct a drug store. He has been a member of the American Medical Association for five or six years. He first heard that a suit had been brought against the American Medical Association when it came out in THE JOURNAL of the AMERICAN MEDICAL ASSOCIATION. He received a letter from the Secretary of the Alabama State Medical Society. There was no letter from Dr. Heizer enclosed. Later the witness received a letter from Dr. Heizer, whom he met in Birmingham. He gave to Dr. Heizer the names and addresses of patients concerning whom he testified.

The witness came to Chicago during the last part of March, remained here a few weeks, returned home, and came back to Chicago again. His expenses are to be refunded.

The witness was then cross-examined in detail concerning the case of Mrs. E. D. and Mrs. M. B., which he described as on direct examination. In treating Mrs. M. B. he gave her syrup of iodid of iron and some quinin in capsules in powder form.

The witness was cross-examined concerning the date on which he treated Mrs. S. He was asked in detail about the cancer growth in this case. He was then asked concerning the date on which he treated Mrs. J. H. and Mrs. P. B. He answered as on the direct examination.

Q.—Now, M. S.—she had hookworm? A.—Yes, sir.

Q.—How long did you say she had been taking Wine of Cardui? A.—She had been taking it off and on for four or five years.

Q.—For what? A.—Four or five years taking Wine of Cardui off and on, irregularly.

Q.—Well, does the hookworm disease last that long. A.—It lasts a lifetime, if you don't remove it, remove the cause.

Q.—Yes, it lasts a lifetime, but how long do you die after you get it? A.—Some people die with old age, I guess, that have the hookworm.

Q.—You treated the hookworm, and did you say she got well? A.—Yes, sir.

He was then asked in detail concerning Miss M. S. and Mrs. C. F.

Q.—Do you know what causes eclampsia? A.—It is disputed, Judge. There are several theories. It is supposed to be toxins, faulty elimination, the kidneys and liver failing to do their duty, failing to throw the poisons out, and they remain in the system and cause it.

Q.—The toxic condition coming from the fetus in the womb—isn't that it—from the child? A.—No; but where it fails to throw the toxins out—uric acid, and others—I think uric acid, they claim, plays an important part in it.

Q.—Now, did you ever see any one besides these two women with eclampsia? A.—Yes, sir; there are a lot of cases of it.

Q.—A lot of cases? A.—Yes, sir; a good many cases.

Q.—Those are the two, however, that had taken Wine of Cardui—A.—Yes, sir.

Q.—What had the other one taken? A.—There are three of those eclampsia cases that had taken Wine of Cardui.

Q.—What had they—you have seen a great many of them where they had spasms in pregnancy— A.—They may have taken Wine of Cardui too, and I don't know.

Q.—You don't know that they had taken it? A.—No, I don't know that they had—

Q.—If you had a history of Wine of Cardui in any of those other eclampsia cases, you would have given them here, wouldn't you? A.—A lot of times I don't take down memorandums—nobody could remember all the Wine of Cardui cases we have in our country.

Q.—If you had a case of eclampsia where the person had been taking Wine of Cardui— A.—If I remembered positively that they had—

Q.—If they had told you about it, you would have testified about it here? A.—Yes.

The witness stated that he had had seven or eight cases of eclampsia of his own and had been called in consultation with other doctors when they have had cases. The witness could not begin to guess how many patients he attended who had menorrhagia or how many with amenorrhea. He has not had many pellagra cases. He treated Mrs. H. S., who suffered with eclampsia, with veratrum and morphin. Instruments were used and the uterus was emptied. In most of the cases of eclampsia the child died. He has not had a case in which the mother died. He was once called in consultation to a case but before he arrived both the mother and child died. He cannot remember how many patients suffering with pelvic difficulties he has seen altogether. It would be safe to say at least fifty a year and this will be true over the last fifteen years.

Adjournment was taken until May 5, 1916, at 10:30 a. m.

May 5, 1916, Morning

TESTIMONY OF DR. WILLIAM O. KROHN

The court met pursuant to adjournment. Dr. William O. Krohn, Chicago, was called as a witness for the defendants.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. William O. Krohn testified that he is a physician practicing in Chicago. He received his doctor's degree in Yale, 1889. He then taught for two years at the Western Reserve University, Cleveland, Ohio. He spent a year abroad in various German universities. Returning to this country, he was made senior teaching Fellow at Clark University, Worcester, Mass. In 1892 he became head of the department in the State University of Illinois, which position he held for five years. From 1897 to 1900 he examined patients for admission to the State Asylum at Kankakee. He did two years medical work at Northwestern University Medical School, receiving his degree in 1905. For six years he was medical juror in the Insanity Court of Cook County. He has been clinical instructor in dispensary work at the Northwestern University. His time is largely given to nervous and mental diseases but he also does some general work.

Q.—Doctor, what has been your experience, if any, with reference to the relation between abnormal conditions in the female pelvic organs and nervous affections in woman? *A.*—My experience has been quite extensive in that connection. We find a great many nervous conditions that are traceable directly to abnormal conditions in the pelvic organs of woman, depending in kind and degree somewhat upon the cause, somewhat upon the time that it is existent, somewhat upon whether it is an organic change in structure progressively receding, or growing worse. But we have all sorts of nervous diseases, nervous conditions, resulting from upsets and abnormalities or disturbances in the pelvic organs of woman.

Q.—How are these troubles or conditions treated, doctor, in a general way? *A.*—In a general way you take each nervous disease as it is when it presents itself, as perhaps it may be more aggravated in its symptoms, and the symptoms will have to be alleviated for the time being. But your fundamental, or your ultimate object is definitely to find the cause of a particular disease, and remove that cause. That is, the particular disease, and remove that cause. That is, the cause of the particular disease or of the particular nervous manifestations. When you find the cause, no matter what pelvic condition it may be, you seek to eradicate that in so far as possible.

Q.—As a condition to the further treatment of the nervous condition? *A.*—As an essential prerequisite to the cure of the nervous condition.

Dr. Krohn testified that he has had no experience with cnicus benedictus. He used viburnum prunifolium for a year or two but found that it did not succeed so he discontinued its use nine or ten years ago.

There was then read to Dr. Krohn a hypothetic question similar to that asked of other witnesses. He stated that he had an opinion as to the physiologic and therapeutic value of the hypothetic medicine.

Q.—What is that opinion? *A.*—In my opinion you have described in your hypothetical question an alcoholic bitter; that is, an alcoholic solution, 20 per cent. alcoholic solution, that contains a dash of bitters.

PUBERTY

Q.—Doctor, I wish you would explain what is meant by the term "puberty" in conjunction with the special experience which you have had, if you have had any? *A.*—By "puberty" we mean the developmental change that takes place in the unfolding of the boy and the girl from childhood to manhood and womanhood. More particularly in this connection, I was a director of the work of examining, making physical tests and measurements, also mental examinations and tests as to memory, power of attention and various mental faculties in 40,000 schoolchildren, showing the particular changes that take place at puberty, or pubescence.

More particularly in the girl, we found that this developmental change is characterized by certain periods or lunges of growth, physically first; that this period of growth is an unfolding in a certain definite order; that all children grow in exactly the same order but grow at a different rate, so that we have a different length of time for the period of the female unfolding.

We have at this period certain manifestations of this development. In the first place there are certain changes in contour, in form and in size. The child will shoot up like a weed for a little while, and then he will grow in breadth of chest and depth of chest and then in the contour of the body.

The girl evidences it in the fulness of the breast, and in both boys and girls, there are certain other manifestations. We find certain manifestations that are peculiar to the girl. To illustrate, the establishment of menstruation, which comes on some months, even as long as a year and a half, after the period of puberty has begun to be initiated. This may be established in the course of one month or two months — that is, the menstruation, I mean, may be established in the course of one month or two months or six months or a year or more, but the period of pubescence is a period of development including these physical and mental changes that take place before the establishment of menstruation and certain other changes that take place after the establishment of menstruation.

We have, on the nervous system side, certain peculiarities that are due to this period in its unfoldment. We have the instability, we have the irritability; we have what the Germans call "the period of storm and stress," where these emotional outbursts, these emotional and erratic tendencies show and when certain characteristics assert themselves which are developing in them as they become sexed and which cause them to clash with school discipline, with authority at home and in school and they come in clash with the discipline and they drop school because of this irritability and these conditions that are the result of the reaction of their nervous system peculiar to the period of puberty.

Q.—Now then, Doctor, you have described, as I understand it, the period of time that may be required for the establishment or development of the menstrual flow. But I do not understand that you have stated the length of time that may be required for the establishment or development of puberty itself. *A.*—Puberty in Illinois — that is the result of the measurements on 40,000 schoolchildren, the average time is three years. That varies a little in different latitudes. I am speaking of the girl now. With the boy it takes a little longer to be established and there are some other things, the change of voice and so on, that are included in the puberty period in a boy. But speaking of girls, the average length of time is two and a half to three years in the United States.

Q.—Now, Doctor, have you an opinion as to whether every girl should take such a medicine as I have described to you in the hypothetical question, at the time of puberty? *A.*—I have an opinion; yes, sir.

Q.—Well, what is that opinion, Doctor? *A.*—In my opinion, when we recall that this is the normal, natural, physiological evolution of the growth of the child from girlhood into womanhood; when we recall the peculiar state of unrest that the nerve cells are in; when we recall the particular groups of muscles that are undergoing growth changes at different periods; when you recall the changes in circulation, and in the various functions of the body, leading up to the establishment of menstruation and the settling into the individual's trend and bent afterward, to my mind the prescription or advice of giving such medical contents as you have described in the hypothetical question is absolutely and positively wrongful advice.

It has no basis whatever—no justification and no basis at all for its being given, because of the vast possibility of harm that it will work out; harm, physical harm, I mean, merely physical harm and harm to the nervous system, I mean mentally and emotionally. You have a high degree nervous condition and you give a medicine that is so largely alcoholic in content, you add fuel to the flame in these explosive nerve cells and you start certain nerve diseases that would otherwise be unknown in the life of that individual. You instigate certain abnormalities, certain morbidities and certain deviations from the normal type that would otherwise—a type that would otherwise remain normal except for the giving of such a drug.

Q.—Now, Doctor, are there any special troubles that sometimes occur in young girls at this period, at the period of puberty? *A.*—There are distinct diseases that are characteristic, at least are common to this period, more common to this period than others, and some that are characteristic of this period.

There are certain nervous diseases that attach themselves to this period in the life of every developing girl. There are certain blood states that are peculiar to this period. I might mention chlorosis; I might mention the disease involving nerve tremors; the diseases that are the result of malnutrition in the changes that take place at this period.

The growing girl at this period requires her food not only for relieving the waste of destroyed tissue each day, but has to have material to supply the growth as well. It is a period of most rapid growth in the life of a girl, and because of this instability there are certain nervous diseases that are peculiar to this time.

Q.—Now, Doctor, what is the effect of alcohol as contained in the hypothetical medicinal solution, in these conditions, on the conditions which you have described? *A.*—Alcohol given at this period of instability, at this period of unrest, at this period of storm and stress, cannot help but cause a greater instability and also interfere with the normal functioning of the body that would ensue were there not this alcoholic interference, so that you have certain diseases of an explosive type, certain forms of hysterical manifestations, certain forms of nervous weakness and tremors that are directly ascribable to an alcoholic medicine at this time.

Q.—Now, Doctor, have you an opinion as to whether a medicine, such as I have described, which contains 48 drops of pure alcohol to each dose should be taken by every girl, including the normal girl, at the time of puberty, and that such medicine can never do her anything but good? *A.*—I have an opinion.

Mr. Hough:—I object to that, if the Court please.

The Witness:—I beg your pardon.

THE COURT:—He may answer.

To which ruling of the Court the plaintiffs, etc., excepted.

Mr. T. J. Scofield: *Q.*—What is that opinion? *A.*—In my opinion, as I have already indicated, the statement that it cannot do any harm is absolutely unfounded in fact, is untruthful in other words and has no basis in medical fact, has no basis in—when we come to understand the physiological organization of the girl, and that, to prescribe that or advise that as a general method of procedure is vicious. It is more than vicious, it is absolutely wrong from a medical and psychological standpoint.

MENOPAUSE

Q.—Now then, Doctor, you have described the period at the beginning of the menstrual development in a woman. Will you kindly tell us something about the end of the menstrual life in a female. *A.*—The period at the end of the reproductive cycle in woman, known as the menopause or change of life, or climacteric, is a period that again is fraught with a host of regressive changes as distinguished from the changes at puberty.

At puberty there is this hurrying up in growth, the impulse to grow and become larger and bigger. It is the growing impulse. In the woman, we have the loss of certain activities, the loss of certain functions. We have coupled with that the reflex effects of that loss or the reflex effects of the inactivities.

So that during this period that obtains from three to five years, that is, the climacteric, the change of life or menopause, you have any possible nervous diseases from headache to forms of unconsciousness; from mere minor pains to convulsive seizures; from merely temporary weakness to complete prostration, the exhaustion diseases; the diseases that are the result of the fatigue poisons; the diseases that are the results of malnutrition and the malnutrition is accentuated because of these modifications that are going on within the organism.

You have all forms of vascular changes, blood circulation changes. We have the hot and cold flashes and we have the spinal symptoms. You have the lead-cap headache at the top of the head, pressing and pressing. The disturbances that are associated with lack of the power of initiation, the inertness that some women have at this period, the

lack of ability to initiate something new. They simply drag along as a result of the nervous modifications of these regressive changes in the organism.

We have of course these changes in the circulation in the pelvic organs, causing changes of circulation in the adjacent viscera, and as a result of that you have a looseness of the intestines, the lax ligaments of the intestines and the liver dropping down, and the abdominal organs and then you have that dropping down of the stomach and intestines and then you have the poisons locked up in the body, the fermentations from the decay of food, and a host of diseases that are attributable to this period and are because of these changes.

Q.—From your experience what would you say is the average length or duration of the menopause? *A.*—The average, did you say?

Q.—Yes. *A.*—From three to five years.

Q.—Have you an opinion, Doctor, as to whether a medicine, such as I have described, should be taken regularly on the first sign of the change of life, and its use continued throughout the whole period. Have you an opinion? *A.*—I have an opinion, yes.

Q.—What is that opinion? *A.*—In my opinion, that is again very wrongful advice. It is wrong as against the woman's own condition, that is, her physical condition. It is wrong in its disguising of the true condition. An alcoholic medicine or preparation, such as you have indicated in your hypothetical question, may make the person temporarily seem to be well, when actually they are not well, and are becoming less and less well, and more and more sick.

And then again, the peculiar nervous depression and the peculiar physical depression that is characteristic of a large number of those cases make the ingestion or the taking in of any alcoholic medicine, or alcoholic preparation, a serious proposition, for, while the momentary effect of the alcoholic preparation would be exhilarating, the reaction is more pronounced in a woman of this type, in a woman at this period, and so, while she may in the course of time, for a moment or a few moments, or a few minutes, as the result of this alcoholic preparation, feel better, she will partake of it regularly—but she will sink down in the trough of the sea further, between the doses, and she will seek to obviate this increased depression that is caused by this form of medication; she will seek to obviate it by more frequent doses, or by larger doses.

Q.—Doctor, I want to read a quotation from the Ladies Birthday Almanac for the year 1907, copyrighted by the Chattanooga Medicine Company. I read from page 9, under the heading, "Untold Misery."

> "Woman. Why let yourself be dragged down, made miserable, sere, yellow, withered, wrinkled and gray-haired before your time, by the pain you think you have to endure. Untold misery is suffered every month by thousands of women for want of the right medicine to help their troubles, Wine of Cardui. Take it and it will help you as it has helped many others in the past 30 years. No matter what the pain, headache, backache, waist pain, bearing down, cramps, colic and so forth, caused by weakness or irregularity of your womanly functions, Wine of Cardui has been proved a successful treatment for their relief or cure."

Now then, Doctor, assuming that the hypothetical medicinal solution which I have described to you corresponds to Wine of Cardui, have you an opinion as to whether the statement which I read to you is true? *A.*—I have an opinion, yes.

Q.—What is that opinion? *A.*—My opinion is that it is not true.

Q.—Why not? *A.*—For the reason that you have listed there a host of groups of complaints of various headaches and symptomatic complaints that you have mentioned there that are due to countless varieties of causes.

If you would put in all of the drugs in the pharmacopeia, you could not in any one solution cure all of those things. It would be impossible to reach and attack all those.

In the second place it is untrue in alleging benefit, because it suggests to women, at a period of life when they are most suggestible, that there is something that will relieve anything that they may have. It first suggests that they have these things, and the suggestion becomes more potent, more forcible as they read it over and over. In fact the psychology of advertising is to list as many as possible and then as they read of these complaints, they find that they have not only one, but they have two or three of these various things, and they are induced to take something at this period when these changes are most pronounced at the climacteric or menopause that will do them harm.

Mr. Hough:—I suggest that that be stricken out, as not responsive to the question. He was not asked to testify as an expert on advertising.

THE COURT:—No, but he was asked why it was his opinion that the statement was not true.

Mr. T. J. Scofield:—That is the question.

Mr. Hough:—The issue in the case is what the medicine will do.

THE COURT:—Yes, and this statement—

Mr. Hough:—Not what advertising might suggest.

THE COURT:—This statement was taken from one of the advertisements of the plaintiff in this case.

Mr. Hough:—The point I make is, that it is not an issue in the case.

THE COURT:—It stated certain things that this medicine would do, as I recall the extract that was read.

Mr. Hough:—And instead of saying that the medicine won't do it, he undertakes to say that that suggestion of a lot of things is one of the purposes of advertising, and that is not responsive.

THE COURT:—That was the opinion of the witness as to why he gave his answer. It may stand, and you may save your point.

To which ruling of the Court the plaintiffs, etc., excepted.

Mr. T. J. Scofield: *Q.*—Now, Doctor, I wish to read to you from the Ladies' Birthday Almanac, for the year 1911, copyrighted by the Chattanooga Medicine Company. I read from page 9.

> "Whatever you do, don't be nervous."

The quotation from the Almanac, is under the head of "Nervous Women."

> "Whatever you are, don't be nervous. Nervous people don't live long, they grow thin and tired and irritable, lose sleep, catch cold and other troubles as soon as these ailments attack them and nearly always suffer from womanly weaknesses. To relieve nervousness, take Cardui, the Woman's Tonic. By helping build up the nerves, Cardui helps the rest of the body and health is the result. Are you nervous, weak, irritable, sick? Take Cardui regularly, and you are well. It is harmless. It does not cause a habit. Take Cardui regularly until you are well. It is harmless, it does not cause a habit. It acts gently and naturally, not like a powerful drug, but just like a mild herb remedy, which it is."

Doctor, assuming that the hypothetical medicinal solution corresponds to Wine of Cardui, what is your opinion of the advice given in this quotation, to take Cardui to relieve such nervousness? *A.*—In my opinion, the advice is wrongful and without justification, for several distinct reasons.

In the first place, the statements upon which it is predicated are, to a certain extent, in error; that nervous people don't live long, and certain other things that are absolutely in error; that nervous people are thin. Some of the worst cases of nervous diseases are in fat men and fat women. The premise is wrong to begin with.

In the second place, you have described here what to my mind is a distinct, general—distinct type of nervous complaints which we group under the term or disease "neurasthenia," by which I mean a disease that is characterized by increased exhaustibility, and also by increased irritability. Those are its nervous manifestations.

You will find, underlying those nervous manifestations, certain pathological changes that are distinct and characteristic of neurasthenia. You will find, for example, a process of fermentation going on in the bowel tract. You will find the distended, baggy, boggy stomach, with its fermentation, and with the retained toxins. You examine the urine of such a person, and you find the indican, the product of the fermentations that are going on.

You find that the liver has dropped down, and the ligaments have become lax. You will find that there is a general ptosis, bearing down of all these organs.

Now, the hypothetical medicine that you have described, and which you have characterized as being of the type as was prescribed under these directions that you have read, or the quotation, cannot get at these underlying causes, and cannot relieve the increased excitability, and cannot relieve the increased irritability that is characteristic of the disease.

Q.—Now, Doctor, what is your opinion of the following statement in the same quotation, assuming that the nervousness is due to some female trouble: "Take Cardui regularly until you are well." On the same assumption, what is your opinion of the following statement: "It is harmless, it does not cause a habit." If you have an opinion, state it. *A.*—Yes, I have an opinion. My opinion is this: That it will do harm and that it will tend, in this nervous type that you have described or assumed, that it will tend to the forming of habits.

The taking of any exhilarating remedy, any remedy with alcohol content, or any other exhilarating agent that makes a person seem more comfortable for a brief period, and then the reaction—they slip down and a nervous person will slip down further below the level that they were before they took the medicine—the pendulum swings back further and, as a result of that, they feel a sort of need to get more exhilaration, and they take more medicine, and they keep on taking it because as they take it they are sure to get more reaction in between. To obviate that reaction, they will take it more and more frequently, and you have a habit formed as a result and the harmful effect.

In other words, the harmful effect of such a plan of procedure is such that the person makes their nervous system their enemy rather than their ally. They have a nervous system that drags them down and hinders them and injures them in all of their activities rather than one that helps them and benefits them.

Q.—Now, Doctor, calling your attention to the Ladies' Birthday Almanac for 1913, copyrighted by the Chattanooga Medicine Company, and on page 27 of that book, I read from an article under the heading, "Oh, that headache."

> "Of course headache is only a symptom, but it is a mighty miserable thing to have and, when it becomes a regular visitor, it begins to be a calamity. Wine of Cardui will not act like a nerve deadener to kill the pain of the headache right off, but it goes down to where the real trouble is, and begins at once to remove the cause, the female inflammation, irregularity or other form of womanly disease. In this way, after a few doses, the headache most likely disappears, and, when the real trouble is cured it stops those regular visits. Try the Cardui treatment for headache and other womanly pains."

Now, Doctor, assuming that the hypothetical medicine, which I described to you in my hypothetical question, corresponds to Wine of Cardui approximately, will you let us have your opinion as to whether

such a medicine will cure the real trouble, as stated in this quotation. *A.*—I have an opinion.

Q.—Will you tell us what that opinion is? *A.*—In my opinion the statement is not borne out by the facts at all, for the reason that, in the first place, you have as many as fifteen different causes of headaches. Many of these causes, of course, you can find out from the location of the headache.

That is, we know, if a headache is at the top of the head, that it is due to anemia or excitement or worry. We have also a large number of headaches that are toxic, the cause of the headache is toxic, by which I mean either poisons that are developed within the body from fermentations, autointoxications, or poisons that are ingested with the food, from improperly prepared or improperly cooked food or food that is improperly contained in cans.

You get your generally described frontal headache. You have certain headaches that are due entirely and wholly to eye disease, that is, diseases of the eyeball. You have other headaches that are due entirely to a shortening or lengthening, at least the incoordination of the external muscles of the eye. You have certain headaches that are due to decayed teeth. You have certain headaches that are due to ear disease. You have certain headaches that are inherited with a nervous condition, the migraine headaches and other headaches of that type.

Now the medicine that is advised, the hypothetical medicine and the medicine that is advised in this statement that you have quoted to me about going down to the origin or the seat of the trouble, does not reach and could not possibly reach the larger, perhaps the larger number of groups of headaches which I have listed.

Then there are a host of reflex headaches, due to reflex irritation of the pelvic organs, that would be really accentuated by such a remedy. There are certain headaches, where if you give any medicine that contains the least alcoholic content whatever, they will become more booming, more thumping, more painful, and more excruciating.

Q.—Now, Doctor, I read to you from the Ladies' Birthday Almanac of 1910, copyrighted by the Chattanooga Medicine Company, page 19, under the heading "Can't sleep."

> "When nature is too exhausted for sweet sleep to come and rest the weary mind and frame, take Cardui, the Woman's Tonic. Sleeplessness is usually a sign of tired nerves. It is one of the symptoms of a nervous breakdown, and should have immediate attention. By building up the nerves and womanly system, Cardui soon brings balmy sleep and restores the weary body to fullfledged energy and refreshment. This method of treatment is safer and better in every way than the use of drugs, opiates, bromids, and nerve sedatives. It creates no habit, but gently helps every part of the body to do the work as Nature planned it to do. You cannot fail to get Cardui if you ask for it in any drug store."

Now then, Doctor, on the same assumption, that the hypothetical medicinal solution corresponds to Wine of Cardui, I would like to get your opinion in reference to the statement in this quotation that it builds up the nerves and womanly system, and restores the weary body to fullfledged energy and refreshment. *A.*—I have an opinion, and, in my opinion you have there stated in the first place a more profound form of this nervous disease, neurasthenia, of which I have already spoken.

Now there is nothing in the hypothetical medicine that you have assumed, or the hypothetical solution that you have assumed, there is nothing there that will build up or increase the nervous strength of the individual. It rather operates the other way.

You have a case of profound fatigue in this nervous condition that you have described. It is like whipping a tired horse to make it go a little further, because—to give a medicine that has the alcoholic content that you have assumed, you make it more tired.

Instead of building up, there is nothing in it that will reconstruct. You have not assumed any element in that that reconstructs the tissues, but you have simply given or used a sort of a whip to whip an overfagged, overtired nervous system.

Now fatigue always engenders a poison in the organism. You cannot be fatigued without having poisons develop in the body. The more profound that fatigue, the greater or more intoxicating is the poison. The blood of a fatigued animal will poison another animal if injected into it.

Now, this fatigue that you increase by your treatment by your whipping up will simply cause more destruction of tissue, more destruction of vitality, more weakness and all of those qualities that you have described in the condition of the woman in that quotation.

EXPERIENCE WITH WINE OF CARDUI

Q.—Now finally, Doctor, have you had any experience with Wine of Cardui? *A.*—I have in two instances only.

Q.—Will you please relate your experience? *A.*—The first is a case of acute alcoholism, and it came under my direction as an emergency matter while I was visiting or attending to some of my—well, it was a farm or plantation down South, at Summerdale, Alabama. There was no physician located there. The woman had become very much disturbed and was showing certain marked signs that alarmed a neighbor woman, and also alarmed her own family. I was called in simply as an emergency matter, not as practicing in Alabama, but to afford what relief I could.

I found a case of acute alcoholism. She was drinking nearly an entire bottle of Wine of Cardui in one day and I had to treat her for the acute alcoholism.

Another case was in this same town, a case where a young woman of 23 or 24, evidently without any peradventure of a mistake, suffered from pellagra, and had been taking Wine of Cardui for three or four months, on the idea that it would build her up, and the Wine of Cardui had at least some—the habit of taking it, and the continued taking of it, and her faith in it for the time being, had obviated the treatment that she should have had in all those three months, to build her up and to obviate the actual fundamental effects of the disease.

Mr. T. J. Scofield:—I think that is all, Doctor.

CROSS-EXAMINATION BY MR. HOUGH

Dr. Krohn was cross-examined in detail concerning the time when he first began to practice and the various positions which he had held since that time, which he described as in the direct testimony. He testified that if he had a case which required gynecologic treatment, he would turn it over to a gynecologist. In prescribing viburnum prunifolium he used the fluidextract. This he did in certain functional disturbances of the pelvic organs associated with certain nervous conditions. The results were unsatisfactory. He used it about a year and a half in fifty-five or sixty cases, covering the years from puberty to the menopause but not the whole range of female troubles. He feels that he gave it a sufficient trial to justify his conclusion that it was not therapeutically active. The longest period of time in which he used it was about eight days in the same individual and twenty-four days within a period of three months, given three times a day and two teaspoonfuls at a dose. When he gave the drug he expected to get the effect of the whole prescription and did not consider the question of the alcohol. He does not know whether the alcohol had any deleterious effect.

Q.—If a doctor gives a medicine, or prescribes one, which has three or four different ingredients, he expects that each ingredient will have some definite action, don't he? *A.*—No, not necessarily, because there are certain aromatics and certain menstruums and so on that are in the preparation. They are not all—

Q.—You mean you consider the alcohol in this purely as a menstruum? *A.*—No, I did not. I thought it was preservative of the drug and extractive, perhaps. That is my impression now. I don't know really what I thought about it, ten years ago. I know I did not think very much of the medicine, but what I thought about it, I do not know.

The patient to whom the viburnum extract was given as described is now alive. She did not get well of her pelvic trouble. The nervous trouble was corrected in about four weeks. The patient was a young woman, 20 years of age, a patient at Mercy Hospital, now residing in California. Dr. Krohn treated her in 1906. He did not in any case continue the viburnum more than a week. He cannot remember that he used it through a menstruation period. He did not figure how much alcohol the patient was getting.

Dr. Krohn was asked what medicines he used that were better than viburnum prunifolium when he abandoned it. In menorrhagia he found fluidextract of ergot better. In dysmenorrhea he secured better results with cannabis indica.

Q.—When you defined puberty, don't you think you confounded it with pubescence? *A.*—Puberty and pubescence are the same thing, sir. The period of puberty and the period of pubescence are the same, though the term "pubescence" is used oftentimes in contradistinction to adolescence or senescence and is given a wider latitude, but really they mean the same thing.

Q.—Isn't puberty, properly speaking, simply the establishment of the menstruation? *A.*—Not at all, sir; no more than the mere change of the voice of a boy is the establishment of puberty or the growth of hair on certain parts of the body is the establishment of puberty.

Q.—Wouldn't you say that the completion of the establishment of menstruation has been called puberty? *A.*—I might say that it might have been so called, possibly erroneously so called, but puberty is, as I have defined it, the whole period of developmental change with all the incidents that occupy the time of this change from girlhood to womanhood and from boyhood to manhood when these nerves and organs are making their rapid growth and the groups of muscles, the canalization of the heart is changing, the blood changes and all that is included in the term "period of puberty."

Q.—You say, then, that the period of puberty could never be limited to one month or two months, or even three months? *A.*—The period of puberty can never be correctly limited to one month or two months or three months.

Q.—What do you mean by "correctly limited"? *A.*—Because it would be a misuse of the term "period of puberty." It is impossible for all the changes that are included in the term "puberty" to take place in three months, or to take place in one year.

Q.—Would you not say that puberty is the appearance of the menses, or menstruation, and that when that is established, that covers puberty? *A.*—Not at all, sir. As I have sought to answer explicitly before, that is not at all the meaning of puberty.

Q.—Is the definition of puberty a matter of individual opinion or is it based upon the definition given the term in medical works? *A.*—

It is based upon—by "period of puberty" you mean to include the changes that take place at this period. Now then, to take your question a moment before and we apply puberty to the boy as well, and "puberty" if it meant only the establishment of menstruation—we would have to have a male term and "puberty" would be the female term. But puberty means all of those changes that take place at this time.

Q.—But when you use the term as applied to the female, don't it relate to the establishment of the menstruation? *A.*—There is no warrant in the world, Mr. Counsel, for making it a more limited term in the life of the girl than in the life of the boy, so far as the time element is concerned, because it includes, in addition to the changes peculiar to sex, it includes also the same changes that take place in the boy.

Mr. T. J. Scofield:—Doctor, won't you turn a little more this way, so that we can hear you.

The Witness:—I was getting interested in the question, that is all.

Mr. Hough: Q.—Would you say that this definition is correct or incorrect: "The age at which"—under the term "puberty"—

"The age at which the reproductive organs become functionally operative. It occurs between 12 and 17 years of age and is indicated in the male by change of voice and seminal discharge, and in the female by the occurrence of menstruation."

Is that an incorrect definition? *A.*—That is not technically a definition of puberty at all. I do not think as you read it, really, it defines puberty. I wish you would read it again, sir.

Q.—"Puberty, the age at which the reproductive organs become functionally operative." *A.*—There is the point, exactly, Mr. Counsel.

Q.—Wait till I finish. *A.*—Oh.

Q.—"It occurs between 12 and 17 years of age, and is indicated in the male by change of voice and seminal discharge, and in the female by the occurrence of menstruation." *A.*—Now, if you analyze that definition yourself, Mr. Counsel, you will see that it is the period at which such and such takes place, and it is indicated—that is, the expression of puberty in the boy is so and so, and the expression of puberty in the girl is so and so, and as you read that language, as I understand the way you read it, it does not mean what you are trying to have me say it means.

Q.—Do you make a distinction between "at the period of puberty," and "during the period of puberty"? *A.*—No. A distinction can be made. At the period of puberty and during—

Q.—Not "at the period of puberty"— *A.*—Well, at puberty means at the period of puberty.

Q.—Then you make no distinction between those two expressions? *A.*—Not as a general proposition, no.

Q.—May menstruation be established in one or two months' time? *A.*—Menstruation?

Q.—In a girl? *A.*—Menstruation itself, yes, may be established in a short time.

Q.—Well, when menstruation has been established, isn't that the end of puberty? *A.*—It is not. It is simply a sign that puberty has gone so far, that the menstruation is established, but it is not complete, it has not completed itself.

Q.—Is nubility a part of puberty? *A.*—I do not know what you mean by "nubility."

Q.—You do not know what nubility is? *A.*—I heard of it yesterday for the first time.

Q.—You never read it in any of the medical books? *A.*—Oh, I never recognized—I have never recognized the word as you have given it; no, sir.

Q.—Have you ever read Dr. DeLee's book? *A.*—Which book?

Q.—"The Principles and Practice of Obstetrics"? *A.*—No. I read his original manuscript, however, the notes of which that book is the outgrowth, that is, the typewritten copy some years ago.

Q.—Did you ever read Dr. Webster's book, J. Clarence Webster? *A.*—No, I have not read much gynecology of recent years.

Q.—At any rate, you do not know what nubility means? *A.*—I have so stated.

Q.—Well now, in common parlance, isn't "puberty" used as referring to the establishment of the menstrual period? *A.*—Common parlance—you mean among the mass of people that have to do with children?

Q.—Yes. *A.*—No, it is not so used. Every schoolteacher knows better.

THE COURT:—Is it not generally understood by the laity that when a young girl begins to menstruate, that she has reached the age of puberty?

A.—Yes, she has reached that age, your Honor. But I did not so understand the Counsel's question.

Mr. Hough:—Now, no matter what might be said in any advertisement, a girl is not likely to take any medicine at that period, unless she has some symptoms, which she regards as painful or distressing, is she? *A.*—Well, she is not likely unless—this is what would happen naturally; a girl at that time has all sorts of erratic symptoms, chiefly nervous, however, and her mother or guardian or friends, or some neighbor will say, "Why, such and such is good for it," and they take it or send for some of it, and they get the directions that it is very good, cannot do anything but good, can do no harm, and that it is of great benefit.

Dr. Krohn stated that if the patient went to a physician he would give her medicine if medicine was indicated; if there was malnutrition or anemia certain drugs would be prescribed. In chlorosis, drugs are given to increase the volume of blood and to increase the oxygen carrying capacity of the corpuscles. In anemia due to the result of hemorrhages, blood transfusion may be indicated. In other anemias, beefsteak, lettuce, spinach and green vegetables containing iron might be given.

Q.—You mean you don't give medicines now as a rule? *A.*—I did not so state, but I say I would try to give the medicine in a way that would cause the least change of program in that girl's life. In other words, I never like to impress a pubescent girl with the idea that she is sick, or is an invalid, because at this stage she is so impressionable, and so I like to make my remedial agencies fit into her daily life and program.

Q.—One moment. When you give a diet that way, you don't call that drugs, do you? *A.*—I said remedial agency.

Q.—I asked you, did you ever give drugs for those conditions, drugs by the mouth? *A.*—I have so stated, and I say, in addition—

Q.—I am not asking you anything in addition. *A.*—I thought you said you wanted my entire treatment.

Q.—Do you give drugs by the mouth for any of those conditions? *A.*—Yes.

Q.—What drugs? *A.*—I have already stated that I gave bromid of gold and arsenic, I have already stated that I gave iron, I have already stated that I gave magnesium sulphate, and I think almost any of the salines increase the volume of blood.

Q.—Have you at any time ever given any of the fluidextracts to a girl at puberty? *A.*—No, not for anemia.

Q.—Have you for any purpose? *A.*—I thought you were still talking of anemia. I do not recall any specific fluidextract that is specially given at that period.

Q.—I don't mean whether you recall any that is especially given. I say, have you ever given any at that period? *A.*—Oh, yes.

Q.—What have you given? *A.*—As I stated before, I temporarily gave this fluidextract of viburnum for a year or so to certain pubescent girls. I have given, as I said before, the extract of cannabis indica for certain other conditions. I have given—if at the puberty period they would have certain congestion of the lungs and so on, there are some of the fluidextracts in the loosening cough mixtures that I would give. If a heart tonic were indicated—the mere fact that she was at puberty would not put her outside of the domain of receiving proper drugs for that condition.

Q.—You did not consider it dangerous when you gave her that drug, did you? *A.*—Gave her what drug?

Q.—The drug which you say you gave. The fluidextract of viburnum among other things, and other drugs containing alcohol, you did not consider that you were doing a dangerous thing for the girl?

A.—No, not for the time, and in the amounts I gave them, as I said. Six or eight drops of cannabis indica for four or five days, and the other medicines for a few days. I did not consider that I was working any harm.

Q.—You know that cannabis indica is indicated as a habit forming drug, do you not? *A.*—Not in the time I gave it.

Q.—Without reference to the time, it is indicated as a habit forming drug, isn't it? *A.*—It is a drug that is used habitually by certain people.

Q.—Well, it is hasheesh, isn't it? *A.*—Not exactly, but here to explain myself—

Q.—Why don't you answer whether it is indicated or is not indicated as a habit forming drug? *A.*—I am trying to answer.

Q.—Well, answer "yes" or "no"? *A.*—It is not indicated in the way I gave it, and under my directions. In the first place—

Q.—You mean then, that a habit forming drug, a certain drug might be habit forming, if given by one person, but as given by you, it would not be habit forming? *A.*—If you will let me complete my answer—

Q.—Just answer that question. *A.*—that last question will not be necessary.

Q.—Just answer that. Do you mean to say that a drug would be habit forming if given by somebody else, but if given by you, is not habit forming. *A.*—I did not so state, and I do not intend to so state. What I mean, if I may explain—

Q.—Go ahead. *A.*—is this: in giving cannabis indica, the fluidextract, the maximum dose of eight drops for four or five days, the patient not knowing what it is, not knowing what the solution is, or what it contains, and not having the solution that is accessible to them, or that they can give any definite amount of, and giving it under the restriction I was, or that it would be given, in the first place only enough of it prescribed, only enough of it given for that case, and for that particular instance, and no one knowing what it is, that is being given them or that is giving them the effect of freedom from pain, there is no way in the world in which they could increase the use of it, because it is properly safeguarded in the way it is being administered.

Q.—That is just lately that it is being properly safeguarded, isn't it? *A.*—I do not think so. I have always properly safeguarded it in my method of giving it.

Q.—It is known as a habit forming drug, is it not? *A.*—And I repeat that it has been used as a habit forming drug.

Q.—Is it not a habit forming drug? *A.*—It has the possibility of being a habit forming drug when it is given promiscuously, without restriction and without any safeguard whatever as to amount. To give it to your little pubescent girl, and say "Now here is some cannabis indica, now take it," and give her a whole lot of it—then she can take it more, and more and more. But that is not the way you give it. Cannabis indica, as I give it, is not a habit forming drug because of the method of my giving it.

Q.—Referring to this habit forming drug, you mean the cannabis indica, and not the alcohol? *A.*—Well, the alcohol in eight drops of cannabis indica—

Q.—That is mostly alcohol, isn't it? *A.*—Well, if it were all alcohol, I would not consider eight drops of alcohol given at the most three or four times in any one course of illness, would be considered in any sense as a habit forming drug, as part of a habit forming picture, or of a deleterious picture.

Q.—You have given as much as eight drops at a dose of cannabis indica? *A.*—I have, yes.

Q.—Don't you know that that is regarded as a dangerous dose? *A.*—I know that it is not regarded as a dangerous dose.

Q.—Is it not so marked, as a dangerous dose, in the pharmacopeia? *A.*—It is a dangerous drug, but you don't give eight drops at the first dose, as a rule, unless you know your patient; but the dose is anywhere from three to four or five to ten drops.

Q.—How many drops of alcohol at one time would you regard as a dangerous dose of alcohol? *A.*—I don't regard—

Q.—I mean, diluted with five times the amount of water? *A.*—I don't regard, in terms of drops, using the term "drops" as you seem to indicate, that any drop dose of alcohol was a dangerous proposition, unless you would run it up into the hundreds or scores or thousands of drops. Then you would get to the danger point.

Q.—If you should take 48 drops of alcohol— *A.*—In one dose?

Q.—and add five times the amount of water, so that you would have a tablespoonful of liquid, would you regard that in one dose, as a dangerous medicine or drug? *A.*—In one dose? Not necessarily.

Q.—Then you did not mean what you said on direct examination, that giving any medicine with alcohol in it was dangerous? *A.*—I meant exactly what I said on direct examination, and everything that I said.

Q.—Do you now say that giving any medicine—giving any person any medicine which contains alcohol is dangerous? *A.*—If you give it as medicine, as giving medicine as ordinarily employed, giving more than one dose. If you restrict it to one dose, then I would accept your corollary.

Q.—Suppose a patient comes to you, and you give them medicine to be taken three times a day, which contains as much as 48 drops of alcohol with other things, would you consider that you were giving them a dangerous medicine, or that it was an improper thing? *A.*—I would, if I gave them a pint or a quart of it, I certainly would.

Q.—I am talking about the first dose. *A.*—Just the dose, one dose, I would say 48 drops of alcohol—I would not think that giving it in that one dose would be a dangerous proposition.

Q.—Suppose you would give them that same medicine every four hours for four or five days. Would you consider that dangerous? *A.*—I would not give it.

Q.—You would not give it? *A.*—No, sir.

Q.—What is the largest amount you would give them for as long a period as four or five days? *A.*—It would depend entirely on the patient. If it were an old drunkard that I was treating for some disease, I would have to put more alcohol in it.

Q.—We are talking about a girl at puberty, and I am confining myself to that. *A.*—I did not so understand you.

Q.—What is the largest amount of alcohol by percentage which you would consider safe to give a girl during that period, if you were going to keep up the treatment for as long as five days at a time? *A.*—The largest amount I would give would be the least amount I could possibly give, and give the remedy that was indicated.

Dr. Krohn then stated that he is familiar with the drugs that fall in his own line; that he knows that there are drugs in the pharmacopeia that contain more than 48 drops of alcohol per dose, but they are not given without prescription. He then testified concerning the quantity of alcohol received by the patient to whom he prescribed viburnum prunifolium for eight days in the various dosages given. He gave the drug on the assumption that it would do good.

Further hearing of the case was adjourned until 2 o'clock of the same day.

May 5, 1916, Afternoon

TESTIMONY OF DR. WILLIAM O. KROHN (*continued*)

Dr. William O. Krohn resumed the stand for the defendants.

CROSS-EXAMINATION BY MR. HOUGH (*continued*)

Dr. Krohn stated that he might give a different medicine for malnutrition at puberty than what he would use in cases of chlorosis or anemia. He defined the difference between malnutrition and anemia. He stated that the words "at the time of puberty" and "during the period of puberty" would mean the same thing unless qualified. He would say that puberty is not pathologic, and that the processes which occur at puberty are not pathologic although certain individuals may have pathologic processes. Pain may occur but is not necessarily pathologic. He could not conceive of any condition in which viburnum prunifolium or drugs of this class would be indicated for anemia at puberty. Medicines may be used during puberty for pathologic conditions.

Q.—For what conditions would medicines—or is medicine ever given by yourself, or the doctors, that you would not consider are pathological? *A.*—Well, I would say, for example, there are certain times when a laxative is indicated; the condition is not pathological, in the sense that there is any disease or a disease element; but you wish to avoid pathological conditions arising, and you discount them by treating them in advance. There might be some congestions—some that we would require to prevent pathological conditions arising. There are certain congestions. There might be certain nervous indications of an oncoming pathological condition that you can obviate by a little treatment. You can prevent the full explosion of a possible disease focus.

Q.—There is such a thing then as preventive medicine, is there? *A.*—There is distinctly so, yes, sir.

Q.—And is that ever practiced in case of girls at puberty? *A.*—Yes.

Q.—That is, to prevent something that might happen? *A.*—It is to prevent something that you think is likely to happen, if you don't interfere.

Q.—What class of medicines would be used for that purpose as preventive medicines? *A.*—It depends entirely on what the conditions are in each individual case. There is no general medicine that you can prescribe for any period or for any sex or for any age; but you have to take up each individual, each distinct diseased condition as it presents itself.

Q.—When you were using viburnum, did you use it for any such condition as that, as preventive medicine? *A.*—No, I do not think so. I used it largely on its reputation; I used it as an entirety, a medicine that was expected to do certain things.

Q.—Have you ever used preventive medicines for girls at puberty? *A.*—I have so stated—yes.

Q.—What medicines have you used? *A.*—Well, it depends entirely again on what condition is presented at first. There are certain conditions that are due to stagnation of the intestinal tract. There are certain conditions that are due to improper habits of sitting and dressing, which require a certain stimulation; the result of methods of living have to be corrected, in order to make their puberty life normal, animal development.

Q.—Now, what medicines have you used for any of those conditions? *A.*—Well, as I have stated, if a laxative was indicated, I would give the best one that is appropriate at that period; saline laxatives, with perhaps iron, if there is any indication of chlorosis—if the blood examination showed any anemia—

Q.—Outside of laxatives, what medicines have you given? *A.*—If it was a congestion due, say, from functional retardation—

Q.—Now, one minute. You are talking about preventive medicine? *A.*—Yes; and to obviate—

Q.—That is where no pathological conditions exist? *A.*—I understand.

Q.—Yes, all right. *A.*—But there are nerve signs, or other signs that a pathological condition may be imminent, and in order to prevent its realization, then you meet the condition.

Q.—Now, there are symptoms, I take it, which suggest the use of preventive medicines, are there? *A.*—Symptoms, or signs, physical signs.

Q.—What would you call the symptoms or signs? What would they usually be? *A.*—They would be—they might be one of many things, or might be a group of many things. If, for example, you find as one sign, the school headache, a typical disease entity; as another sign you would find lack of—well, a sort of stasis, because of lack of proper exercise; the enforcement of certain conditions—or, as you take it in these girls that work in the stores in unhygienic surroundings, you have to assist by supplying the thing that is called for. We have signs that this girl is becoming pale, that she is becoming tired easily, that she has a certain type of headache, that she has a certain muddiness of the skin, that she has a certain paleness of the lips, that she has that greasy white tongue; all of these things are signs or indications that something should be done to prevent the girl from becoming a less efficient wage earner.

Q.—And viburnum has been, in the past at least, a very common remedy for that condition, hasn't it? *A.*—I don't know of any case where it is a remedy for that condition.

Q.—Don't you know that it has been very generally used in that condition? *A.*—I do not know it.

Q.—Have you ever been connected with any girls' schools? *A.*—Yes.

Q.—Don't you know that it is always kept and given there? *A.*—I do not know that it is.

Q.—Don't you know that Hayden's viburnum compound is? *A.*—I do not know that it is. I do not know—I know that where I was associated, at any rate, it was not in evidence.

Q.—What schools were you associated with where there were girls at puberty—the age of puberty? *A.*—Well, I had charge of the examination of physical condition of the students that were indulging in gymnastics, et cetera, at the Hyde Park High School in this city; and one or two of the district schools in my vicinage; and also at Cleveland I had some work in that connection.

Q.—Was there a medical department in connection with these schools? *A.*—You mean a medical man—

Q.—Or a medical woman who dispensed drugs to girls who needed it for the purposes we have been talking about? *A.*—Not so much drugging, as proper advice and reference.

Q.—Is there not a medical department in connection with large stores in which they dispense medicine? *A.*—There is, yes.

Q.—And don't they always give the viburnum in some form? *A.*—I don't know that they do. I do not know.

Dr. Krohn has not been connected with any school in which there are dormitories for girls. He was connected with the

medical department of Northwestern University and not with the College of Liberal Arts. The latter has a medical department but he does not know that they dispense drugs.

The menopause is frequently attended with pathologic conditions but it is a normal condition.

Dr. Krohn has used pulsatilla but he did not prescribe it for women. He has also used cimicifuga. He testified that alcohol is always a physical exhilarant in the initial stages. The reaction is one of depression. A large enough dose of a sedative drug in an alcoholic solution would counteract the effects of the alcohol. He used remedies as combined and noted their final effect, without reference to the percentage of alcohol.

Dr. Krohn was then cross-examined in detail concerning the case which he saw at Summerdale, Ala. He does not know whether the husband of the woman is still living at that place. He still owns property in that vicinity. He was last there in March, 1914.

He testified in detail concerning the incident in which he saw this woman. She was in a state of confusion and delirium when he first saw her and began to show signs of coherency and clear perception about six hours afterwards. The history of the case was given to him in part at each of his four visits. The husband of the woman told Dr. Krohn that she was a "Cardi Fiend." Dr. Krohn saw a Cardui bottle in the room; there was about an inch of fluid remaining in the bottle. The room was 12 feet wide. There was no carton on the bottle. Dr. Krohn believed that he could not have been mistaken. The patient stated that she had not taken any Cardui for some weeks before but she felt she had to have it; procuring it, she took more than she should have taken. The patient stated that she had not been drinking anything else for about a month prior to this time. She had taken the contents of the Cardui bottle with the exception of the fluid that remained, in ten hours time. He knew what was meant when the husband of the patient called it "Cardi" as he had heard it called that by other natives in the same district.

The patient was not well when Dr. Krohn left as she had nausea and vomiting but she was beginning to take nourishment without regurgitating it.

Q.—Now, would you say that that amount of this hypothetical medicine, containing 20 per cent. of alcohol, taken through a period of ten hours, would produce delirium in a person who was normal? *A.*—Well, it could and would in some individuals. It would not in every individual. It would not in the vast majority; but there are those who have such little toleration of alcohol, taken on an empty stomach, that it would.

Q.—Well, let us take a woman who had not had any alcohol for a month, would you say that amount would produce delirium? *A.*—Yes, it would in an impoverished person, a hungry person, a person without food in the stomach—it would do it—could do it in a great many cases.

Q.—Did you ascertain that she took no food during those ten hours? *A.*—I know this, they had no money for food. I know, as a matter of charity, some of us people bought food, and I know the women of the town were supplying food to this woman who spent her money for Cardui.

Q.—How much money had she spent for Cardui? *A.*—I know she spent for that one bottle, that is all I know.

Q.—How much was that, one dollar? *A.*—That was the information they gave me.

Q.—That is, one dollar for Cardui in one month—is that the only money they had? *A.*—Only that one day.

Q.—But they had not had any for a month before that? *A.*—They had not had any dollar before that.

Q.—That is what I say, they had not had but a dollar for a month—you ascertained that, did you? *A.*—I ascertained from the history that that was the first she had had for a month.

Q.—The man was working in the turpentine camp, all the time? *A.*—No, it was not the turpentine camp; as I stated—the man was working for this laboring crew that were gathering these fat stumps, and shipping them to this turpentine factory.

Q.—At any rate, he was working steady? *A.*—Steadily, as work was offered.

Q.—Was he a white or black man? *A.*—White.

Q.—How many children did they have? *A.*—Four.

Q.—And what was his name? *A.*—Well, I have been trying for the last two minutes to think of the name. I think I can secure it for you.

Q.—Well, Doctor, you have known for quite a while you were going to testify to this? *A.*—No, I did not.

Q.—You didn't? *A.*—No.

Q.—Did you try to think of it before today? *A.*—Well, no, I had not thought especially with reference to the name, it is simply the incident that impressed me. But, as I said, Mr. Counsel, I think I can secure the name for you, and be very glad to supply it to you.

Q.—When did you first think of referring to this incident? *A.*—Why, I had not thought of referring to it—I simply—it made an impression upon me at the time, and I think perhaps this morning a little discussion as to the testimony of some of these southern physicians as to what Cardui had done in certain instances—I simply spoke of one or two instances in which I had seen it.

Q.—Did anyone go there with you? *A.*—There were ladies of the neighborhood, or the village that took food there.

Q.—You mean at the hotel? That took food at his place? *A.*—Took food to—from the hotel to this cottage home. A little girl came over and asked for food first—that is the first that we knew they were in poor circumstances—they asked for food three or four days before this incident.

Q.—Do you know the name of the little girl? *A.*—Her first name?

Q.—Yes? *A.*—No, sir, I don't believe I do.

Q.—Is there a doctor in that place? *A.*—There was no doctor there; and I believe there is none there now.

Q.—You did not go there prepared to practice? *A.*—I have already stated I was simply there on a business trip.

Q.—Where did you get the stomach pump to pump out the stomach? *A.*—Well, that was not a real stomach pump. It was one that I improvised.

Q.—Well, what did you improvise? *A.*—I improvised a rectal tube in the end of a funnel.

Q.—But you said you used a stomach pump, didn't you? *A.*—Well, it was a stomach pump for that day, and that night.

Q.—Now, just how did that work? It was not a pump at all, was it? *A.*—It was a stomach pump, yes, sir.

Q.—How did you work it? *A.*—Filled the siphon full of water, with soda in it, and held it up, after I pushed this tube down and held it up, after it was filled full, turned it over and the contents of the stomach ran out.

Q.—That is you— *A.*—Siphoned it out.

Q.—You mean you sucked it out? *A.*—Siphoned it out.

Q.—How did you start it? *A.*—As you start any siphon. You have a tube full of water, and then let go of it, and it runs right out.

Q.—Well, you have got to have the receptacle from which the liquid is drawn higher than the highest point of the tube, don't you, to siphon it out? *A.*—Well, that is easy, if the person is in bed, you can put the end of the tube on the floor where the basin is.

Q.—And lift her up? *A.*—No; you do not have to lift her up; just lift the tube down on the—

Q.—But it has to come out of her mouth, doesn't it, so that the mouth must be lower than the stomach? *A.*—No. You can bring it right up from below, it will come up through the mouth—

Q.—Quite right, but when you do that, you have got to start to suck it, haven't you— *A.*—No.

Q.—to get it up there? *A.*—You are mistaken.

Q.—Do you do anything of that kind? *A.*—I said I did not, and it was not necessary. You don't have to.

Q.—That is, it will run uphill first, by itself, and then run down? *A.*—It will run out on the floor, and run out in the pan.

Q.—Now, what else did the man tell you about how frequently his wife had gotten drunk on Cardui? *A.*—There was nothing else as to any frequency.

Q.—Just one time? *A.*—Yes, sir. He was simply alarmed about her condition at that time.

Q.—Now, what was the name of the company for which he was working? *A.*—I say, I think that he was working for individuals who took contracts like—probably one man who had a team would take a contract to haul out so much, to haul at so much a cord, haul this fat wood from the pine woods and pine stumps. That is the way it is usually done there. There is Pete Johnson—and four or five fellows that had teams that would hire these men to gather these stumps.

Q.—Did this man work for Pete Johnson? *A.*—I do not recall.

Q.—What was the name of the—any of the ladies who took food to this family? *A.*—A Mrs. Barnes.

Q.—What Barnes is that? *A.*—Mrs. A. B. Barnes.

Q.—Do you know whether she lives there now or not? *A.*—The last I heard of them they did. She was there.

Q.—Did she have a husband? *A.*—She was in New York last summer with her little child—at Montclair, N. J.; but her husband was still living there. He was the superintendent of the tobacco plant, and I think she has returned there, after the summer's heat was over.

Q.—You mean the tobacco plant near there? *A.*—Sir?

Q.—You mean the tobacco plant where? *A.*—The tobacco plant is at Summerdale, that is the warehouse of the tobacco company.

Q.—What were the names of the other ladies? *A.*—Mrs. Francher and Mrs. Barnes are two that I remember as taking food there.

Q.—Did the both of them—or rather, Mrs. Francher, does she still live there? *A.*—I think so, sir.

Q.—Was she a resident there then? *A.*—Yes, sir.

Q.—What was—what did her husband do? *A.*—He was a land agent.

Q.—You say you think you can get the name of this person? *A.*—Yes, I shall endeavor to do so, sir.

Q.—In what way do you think you can get it? *A.*—Well, I will write—I thought first of writing to Mr. Barnes, because of his wife being concerned in taking food there—I thought I would write and find the name through them.

Q.—Did Mr. Barnes go with you or know that you went over there? *A.*—No—oh, he probably knew that I was going there, yes.

Q.—Do you recall the name of the hotel keeper where you stayed? *A.*—Yes; Mr. Morgan.

Q.—Morgan? A.—Yes, sir.

Q.—Do you know his first name? A.—Now, wait, I do—oh, yes, H. B. Morgan, we used to call him Highball Morgan.

Q.—H. B. Morgan? A.—Yes.

Q.—What was the second case, Doctor? A.—The case of a young lady about 23 years of age.

Q.—The same place? A.—Same town, yes, sir.

Q.—At the same time? A.—No. My recollection is that that was about the middle of September, or the first of October of the same year, 1913.

Q.—How long did you stay down there, that trip? A.—Well, I was going and coming a good part of the time. I think that the first time I was there was when they were paying out for the tobacco—O. K.'ing the payments for the company. I was there probably four weeks from the—

Q.—That was in August? A.—from the 15th of July, approximately, until about the 20th of August. Then I returned. I came here to Chicago to be operated upon; and returned there about the 1st of September, and stayed until Thanksgiving—or the day before Thanksgiving.

Q.—And that was on the occasion of this second visit, was it? A.—The second—yes, sir, the second sojourn there.

Dr. Krohn was then cross-examined in detail concerning the second case. He was called by a man to attend a young girl who had engaged a room in his house. This man was a sheepman reputed as being the dog poisoner of the community. The girl's people were of ordinary means. Dr. Krohn could not recall the name of the girl and her mother. He saw them two times, at night and the next morning. He got the history of the girl from the mother.

Q.—What did she say? A.—She told me of the fact that the girl had been feeling badly for some four or five months, and that about three months prior to the time I saw her she was starting to take the Cardui tonic, and was taking it.

Q.—Did she say whether she—whether the mother had given it to her, or whether anybody else had given it? A.—No. That was not stated. She simply had taken it.

Q.—Did you ask anything about the previous history of her case? A.—Yes, I did.

Q.—Whether she had been under the care of a physician or not? A.—Yes. I asked as to what symptoms had been manifested earlier, as to whether she had been a healthy girl, and as to whether she was married or single, as to whether she had had any emotional shocks, or disturbances; because she appeared in this hysterical nervous condition, to be like a person who had suffered some great grief, or anxiety; and that is one thought that occurred to me when I saw the girl there.

Q.—Was she lying down? A.—Lying and tossing.

Q.—Lying and tossing? A.—Yes. And would get up—

Q.—You mean on a bed? A.—Would get up, and then would fall. She was in a weakened condition, and I found pellagra.

Q.—Was she able to talk to you? A.—She talked to me some, but she was not very responsive to questions.

Q.—Then what did her mother tell you? A.—Well, I started to say that she started this Cardui treatment three months before, and had been taking it up to this time, but she had not taken any that day.

Q.—For what purpose had she taken it? A.—For her weakness.

Q.—Did she say what the weakness was, how it was indicated? A.—No; but just simply she was all fagged out and weak.

Q.—Did she say she had any menstrual disturbances? A.—She did not.

Q.—Did you ask whether she had any disturbances of that kind? A.—I asked her whether she was menstruating at the time, but she was not. There was no examination made of the gynecological condition.

Q.—She was merely nervous? A.—Very nervous, but she had the disease, pellagra.

Q.—How did you ascertain that? A.—Well, the condition of the skin, the whole condition, the nervous condition and all were like the cases we have here at Bartonville and Dunning.

Q.—At Bartonville and Dunning? A.—Yes.

Q.—Where is that? A.—Two state hospitals.

Q.—Here in the state? A.—Yes, we had 400 cases at Bartonville, and we had twenty-three cases at Dunning.

Q.—Now, did the girl herself tell you anything about her history, after you saw her, the next day? A.—I say, she went the next morning on the train north. On account of the illness that night her mother said she would take her home. I saw her about six o'clock one evening, and half past five next morning.

Q.—At that time she did not give you any history? A.—No, she did not, sir.

Q.—At that time did she say how much Cardui she had taken at the last time? A.—No; only it was a period of three months—and had not taken any the day before.

Q.—Had not taken any the day before? A.—Yes.

Q.—When had she taken some before that? A.—Well, I assumed that she had taken it up to the day before.

Q.—Do you mean daily? A.—What?

Q.—Did she take it daily? A.—Why, her mother said she had taken it three months, but did not take any yesterday—that is all I know.

Q.—You did not make any inquiries to ascertain whether she was taking it at the monthly periods, or between periods? A.—No, I did not. I was not interested even in that at that time, at all.

Q.—Did you see any bottles of Cardui there? A.—No; there were none there. They just came that night, so had not taken any of it. There was no evidence of it, except the mother's statement.

Q.—Did you get the impression that she came there for her health? A.—I did not get any impression of that kind. I do not know that it occurred to me to ask what they came there for.

Q.—Is it a health resort? A.—No. It is a healthy place, but it is not a health resort.

Q.—It is not a place that people go for a sojourn for the summer or for their health? A.—No, it is not.

Q.—They only go there for work? A.—Well, a lot of people bought property there on the idea that it was going to be a great agricultural community; and some of them go down there to look at their property; some go to see how badly they were skinned when they bought the property; and some go to see whether they have anything left there.

Q.—Do you know whether she had bought any property there? A.—I do not know at all the occasion of her being there.

Q.—Is there any way in which you could find out her name? A.—Well, this village of Cantonment is a small place, not over 55 or 60 people. I think it would be easy to find her.

Q.—Did I ask whether she told you she had a husband or not? A.—I did not ask that. I do not know—I think you asked me and I answered that.

Q.—That you did not know whether she had or not? A.—I did not know whether she had or not.

Q.—Is there any way you can suggest by which she can be located in Cantonment? A.—I think it could be done through the postoffice—or through the postmaster or the storekeeper.

Q.—Would you ask the postmaster to enable you to locate her? A.—That is up to you—

Q.—I am asking you if you know of any way— A.—Oh—I don't know—I would ask about a girl that had pellagra there—perhaps you could get her that way.

Dr. Krohn stated that he did not think that this girl had an alcoholic habit.

The witness indicated on the label of a bottle of Wine of Cardui about how much fluid was remaining in the bottle which he saw on the table when he attended the first case.

He took the hypothetical question as it was stated. If there had been a material increase in the quantities of the drugs in the hypothetical medicine its medicinal value would only have been increased as alcoholic bitters. It might be more of a hepatic stimulant. He stated that if he assumed the drugs to have a sedative action on the uterus in the usual dose of 30 to 60 grains he believed that 3 grains would be negligible. If carduus benedictus were used as an adjuvant to another medicine that had a sedative action he believed that it might possibly have a synergistic action.

The witness stated various conditions which might cause a headache in a woman. The witness read a statement from the Ladies' Birthday Almanac for 1913 concerning headaches. He believed that this statement gave the impression that all these headaches were due to female diseases. The witness testified that about one fifth of his time is taken in examinations in legal cases.

Adjournment was taken until Monday, May 8, 1916.

(To be continued)

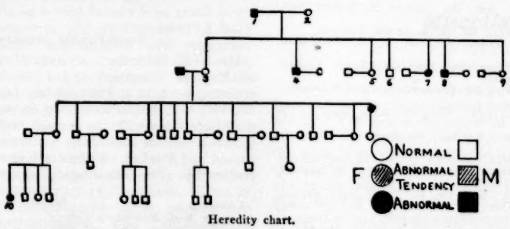
Physical Defects and Truancy.—At the request of the Department of Education the Bureau of Child Hygiene of the department of health of New York City has made a study of the causes of truancy. It was recognized that home environment undoubtedly was a factor but physicians have felt that physical defects might also play a considerable part. It was found that last year, among 800,000 pupils in the public schools of this city, there were 21,942 truants, less than 3 per cent. A physical examination of these truants was undertaken, and thus far eighty-five have been examined, and while this number is too small to warrant definite conclusions, the results of these examinations are not without interest. In nine instances the family history seemed to have a definite bearing on the truancy, the father being alcoholic in five cases, insane in one and tuberculous in another. In two cases the brother of the truant was epileptic. In eight instances the physician reported stigmata of degeneracy. There were sixty-four truants with some obstruction to nasal breathing and the eyesight was defective in twenty-seven out of seventy-seven truants. The proportion of bony deformities was high, twenty-six cases, in ten of which the truants showed scoliosis. An irritable heart was reported in seven cases, and endocarditis in ten. Pulmonary tuberculosis was encountered in only one individual.

Correspondence

Endocrinopathic Inheritance

To the Editor:—In an article on this subject (THE JOURNAL, May 6, 1916, p. 1438), Dr. Walter Timme analyzed a family history which apparently followed the mendelian laws of heredity. Timme concluded, on the basis of this analysis, that one may be able to forecast to some degree the characteristics of the offspring in certain marriages.

I enclose a chart drawn similarly of a family originating in the union of a diabetic man (No. 1) and normal woman (No. 2). There were seven children in this family, three of whom (Nos. 4, 7 and 8) were diabetic. The oldest in this family (No. 3) married a man with a large simple goiter, and from this union eleven children were born, all apparently normal; the ages of these range from 18 to 40 years. Six of these were married and gave rise to twelve children with abnormality in only one—a moderate obesity (No. 10). Of the remaining six individuals in the first family, five were married, giving rise to fourteen children in the second and one in the third generation, all of whom are apparently normal, their ages ranging from 3 to 33 years.



Heredity chart.

According to the conclusions of Dr. Timme, the family of No. 3 should offer a fruitful field for endocrinopathic inheritance; but in the total number of twenty-one individuals arising from this union in two generations, only a single abnormality arose, and that a slight one.

IRVING F. STEIN, M.D., Chicago.

The Effect of Adenotomy on the Hypophysis System

To the Editor:—The fact that after adenotomy, an operation which impinges on the periphery of the hypophysis system, the hypophysis system shows a strikingly increased activity in the direction of growth and development, is explained by the fact that the pharyngeal pituitary and probably the entire glandular portion of the pituitary system is stimulated through the excision of "adenoids." The anatomic explanation of relationship between the pharyngeal hypophysis, adenotomy and more rapid growth is the fact that the pharyngeal pituitary is located close to, if not actually in, the "adenoid" tissue. Further justification for this relationship is the well recognized axiom that following adenotomy, children immediately take on a greatly increased rate of growth.

The cases of retarded growth relieved by adenotomy suggest that the condition of "adenoids" inhibits the nutritional or developmental function of the pituitary system which we have come to understand as necessary for normal development.

In a former article (*Am. Jour. Med. Sc.*, July, 1914) I pointed out that the "adenoid" region is the part of the nasopharynx most assailable by infection, and that the angle of this region is the most vulnerable spot in the whole body. When, therefore, it is considered that the infections of this region not only have an influence on the organism in the shape of metastatic infections, but may involve the hypophysis system as well, the relation of "adenoids" and adenotomy to growth and normal well-being assumes vital importance.

W. SOHIER BRYANT, M.D., New York.

The Excesses of Youth.—The excesses of our youth are drafts on our old age, payable with interest, about thirty years after date.—Colton.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LOCAL DENTAL ANESTHETIC

To the Editor:—What is your opinion of the following formula for use as a local dental anesthetic?

Cocain hydrochlorid, 1⅛ grains.
Adrenalin, 3/200 grain.
Hydrogen peroxid, 60 minims.

Before using add to three parts of this, solution of boiling water.

A. Is there any incompatibility between hydrogen peroxid and adrenalin?

B. Is there any formula preferable from the following points of view: (1) less toxicity; (2) greater anesthetic power; (3) comparable antiseptic power?

H. GRIGNON, M.D., St. Jovite, P. Q., Canada.

ANSWER.—A. Adrenalin (epinephrin) is readily decomposed by oxidizing agents. Hence it should not be mixed with hydrogen peroxid.

B. From 0.2 to 0.3 c.c. of 1:1,000 solution of epinephrin may be added to a solution of cocain for subcutaneous injection to delay absorption and prolong local anesthesia. Solutions of cocain hydrochlorid for subcutaneous injection vary in strength from 0.5 to 4 per cent. In the infiltration method, solutions of 1:1,000 in physiologic saline are used in larger doses. Smaller amounts are used when solutions of 1:1,000 are employed. Novocain is usually said to be from one sixth to one tenth as toxic as cocain, but the toxicity of novocain depends strictly on the way in which it is administered. The subject is fully discussed in the Pharmacology of Useful Drugs, by Hatcher and Wilbert.

SCANDINAVIAN MEDICAL JOURNALS

To the Editor:—Please furnish me a list of medical journals published in the Scandinavian countries, Sweden, Norway and Denmark.

D. L. TILDERQUIST, M.D., Duluth, Minn.

ANSWER.—Following is a list of periodicals and the place of publication:

Allmänna svenska läkartidningen, Stockholm.
Bibliotek for Læger, Copenhagen.
Finska läkaresällskapets handlingar, Helsingfors.
Helsovännen, Stockholm.
Hospitalstidende, Copenhagen.
Hygiea, Stockholm.
Jordemodern, Stockholm.
Medicinsk Månadsrevy, Stockholm.
Medicinsk Revue, Bergen.
Nordisk Tidsskrift for Terapi, Copenhagen.
Nordiskt Medicinskt Arkiv, Stockholm.
Norsk Magazin for Lægevidenskaben, Christiania.
Norsk Tidsskrift for Militærmedicin, Christiania.
Svenska Läkaresällskapets Handlingar, Stockholm.
Tidsskrift for den Norske Lægeforening, Christiania.
Tidsskrift for Jordemødre, Copenhagen.
Tidsskrift for den norske Lægeforening, Christiania and Copenhagen.
Tidsskrift i militär Helsovård, Stockholm.
Tidsskrift for Jordmødre, Christiania.
Ugeskrift for Læger, Copenhagen.
Upsala Läkareförenings Förhandlingar, Upsala.

DR. GROEDEL

To the Editor:—About a month ago I clipped from THE JOURNAL (Queries and Minor Notes, April 22, 1916, p. 1343) an inquiry concerning Dr. Groedel of Bad-Nauheim, and sent it to the doctor's brother. I am enclosing his reply.

SUMNER SHAILER, M.D., New York.

My Dear Doctor:—Referring to the clipping from THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, I am very glad to report that I received a letter from my brother post-marked Munich, in which he stated that he, as well as his son, Dr. Franz Groedel, are enjoying the best of health. He further stated that he intended opening his sanatorium at Bad-Nauheim on the 20th of April. . . .

THEODORE GROEDEL.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 10. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, July 5. Sec., Dr. H. C. De Vighne, Juneau.

CALIFORNIA: San Francisco, June 27. Sec., Dr. Charles B. Pinkham, R. 527 Forum Bldg., Sacramento.

COLORADO: Denver, July 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Regular, New Haven, July 11-12. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven; Homeopathic, New Haven, July 11, Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven; Eclectic, New Haven, July 11, Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DELAWARE: Dover and Wilmington, June 20-22. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, July 11-13. Sec., Dr. Edgar P. Copeland, The Rockingham.

FLORIDA: Jacksonville, June 13-14. Sec., Dr. E. W. Warren, Palatka.

ILLINOIS: Chicago, June 21-23. Sec., Dr. C. St. Clair Drake, Springfield.

INDIANA: Indianapolis, July 11-13. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

IOWA: Iowa City, June 8-10. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, June 13. Sec., Dr. H. A. Dykes, Lebanon.

KENTUCKY: Louisville, June 13-15. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 8-10. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

MAINE: Augusta, July 6-7. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MICHIGAN: Ann Arbor, June 19-21. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 6-9. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 20-21. Sec., Dr. J. D. Gilleylen, Jackson.

MISSOURI: St. Louis, June 13-15. Sec., Dr. J. A. B. Adcock, Jefferson City.

NEBRASKA: Lincoln, June 8-9. Sec., Dr. H. B. Cummins, Seward.

NEW HAMPSHIRE: Concord, June 26-27. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. Alexander MacAlister, 429 E. State St., Trenton.

NORTH CAROLINA: Raleigh, June 27-30. Sec., Dr. H. A. Royster, Raleigh.

NORTH DAKOTA: Grand Forks, July 4. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, June 6-9. Sec., Dr. George H. Matson, State House, Columbus.

OKLAHOMA: Oklahoma City, July 11. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, July 5-7. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 11-13. Sec., Mr. Nathan C. Schaeffer, Department of Public Instruction, Harrisburg.

RHODE ISLAND: Providence, July 6-7. Sec., Dr. Gardner T. Swarts, Room 313 State House, Providence.

SOUTH CAROLINA: Columbia, June 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

SOUTH DAKOTA: Deadwood, July 11. Sec., Dr. Park B. Jenkins, Waubay.

TENNESSEE: Knoxville, Memphis and Nashville. June 16-17. Sec., Dr. A. B. DeLoach, Scimitar Bldg., Memphis.

TEXAS: San Antonio, June 27-29. Sec., Dr. John S. McCelvey, Temple State Bank Bldg., Temple.

UTAH: Salt Lake City, July 3. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, July 11-13. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 20-23. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Tacoma, July 4. Sec., Dr. C. N. Suttner, Walla Walla.

WEST VIRGINIA: Charleston, July 11. Dr. S. L. Jepson, Charleston.

WISCONSIN: Milwaukee, June 27-29. Sec., Dr. J. M. Dodd, 220 E. 2d St., Ashland.

WYOMING: Laramie, June 14-16. Sec., Dr. H. E. McCollum, Laramie.

Indiana January Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, Jan. 12-14, 1916. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, of whom 7 passed, including 1 candidate who was granted a registration license, and 1 failed. Twenty-two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Woman's Medical College, Chicago		(1890)	75
Indiana University		(1914)	84.6
Harvard University		(1913)	89.1
University of Michigan Medical School		(1915)	85.4
University of Toronto		(1906)	84.1
National School of Medicine, Morelia		(1912)	82.7
	FAILED		
Kentucky School of Medicine		(1890)	61.7

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Coll. of Eclectic Med. and Surg.		(1885)	Wisconsin
Chicago College of Medicine and Surgery		(1914)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1901)	Illinois
Hering Medical College		(1913)	Illinois
Northwestern University		(1913)	Illinois
Rush Medical College		(1913)	Illinois
Fort Wayne College of Medicine		(1891)	Ohio
University of Louisville	(1907) Illinois; (1912)	(1913)	Kentucky
College of Phys. and Surgs., Baltimore		(1912)	W. Virginia
Maryland Medical College	(1902) West Virginia;	(1913)	Penna.
University of Maryland		(1900)	N. Carolina
Eclectic Medical College, Cincinnati		(1896)	Illinois
Starling-Ohio Medical College		(1912)	Ohio
Pulte Medical College		(1896)	Ohio
University of Cincinnati		(1914, 2)	Ohio
Jefferson Medical College		(1914)	Penna.
University of Pittsburgh		(1912)	Penna.
University of Tennessee		(1879)	Kentucky

College	LICENSED ON SATISFACTORY CREDENTIALS	Year Grad.	No. Licensed
University of Louisville		(1868)	1

Pennsylvania January Report

Mr. N. C. Schaeffer, secretary of the Pennsylvania Bureau of Medical Education and Licensure, reports the written examination held at Philadelphia, Jan. 18-20, 1916. The total number of subjects examined in was 5; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 67, of whom 59 passed and 8 failed. Eight candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Examined
American Med. Missionary College		(1902)	1
Chicago College of Med. and Surg.		(1914)	1
Hahnemann Med. Coll. and Hosp., Chicago		(1905)	1
University of Louisville		(1902) (1912)	2
College of Phys. and Surgs., Baltimore		(1914)	1
Johns Hopkins University		(1914)	1
University of Maryland		(1914)	1
Boston University		(1914)	1
Harvard University		(1912)	1
Tufts College Medical School		(1913)	1
Columbia University, Coll. of Phys. and Surgs.		(1913)	1
Fordham University		(1913)	1
University of Bellevue Hosp. Med. Coll.		(1911)	1
Jefferson Medical College		(1913, 2) (1914, 18)	20
Medico-Chirurgical College of Philadelphia		(1914)	8
Temple University		(1913) (1914, 3)	4
University of Pennsylvania		(1913, 1) (1914, 7)	8
University of Pittsburgh		(1914)	2
Woman's Medical College of Philadelphia		(1914)	2
University of Texas		(1912)	1
	FAILED		
University of Louisville		(1912)	1
College of Phys. and Surgs., Baltimore		(1914)	1
Maryland Medical College		(1912) (1913, 2)	3
Woman's Medical College of Pa.		(1908)	1
McGill University		(1915)	1
University of Genoa, Italy		(1912)	1

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1911, 2)	Dist. Colum.
Howard University		(1910)	W. Virginia
Washington University		(1913)	Missouri
Ohio State University College of Medicine		(1914)	Ohio
Jefferson Medical College	(1912) Maryland;	(1913, 2)	Delaware

South Dakota January Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Pierre, Jan. 11-12, 1916. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College		(1914)	87.4
College of Phys. and Surgs., Chicago		(1905)	81.2
Rush Medical College		(1913)	92.6
University of Illinois		(1913)	87.7
	FAILED		
Baltimore Medical College		(1901)	60.4

Book Notices

THE DUCTLESS GLANDULAR DISEASES. By Wilhelm Falta. Translated and Edited by Milton K. Meyers, M.D., Neurologist to the Lebanon Hospital, Philadelphia. Foreword by Archibald E. Garrod, M.D., F.R.C.P., F.R.S., Physician to St. Bartholomew's Hospital, London. Second Edition. Cloth. Price, $7 net. Pp. 674, with 101 illustrations. Philadelphia: P. Blakiston's Son & Co., 1916.

The book contains an introductory chapter on the embryology and general physiologic relations of the ductless glands. This is followed by two chapters on the diseases of the thyroids. The diseases of the parathyroids, thymus, hypophysis, pineal body, suprarenals, pancreas and the gonads are each accorded a chapter. There is one chapter on pluriglandular diseases (multiple glandular sclerosis, giantism), and three chapters on diseases which, according to Falta, are not directly traced to disarrangement of the endocrine glands, such as status lymphaticus, infantilism, mongolism, chondrodystrophy, and the different forms of obesity.

A careful perusal of the volume leaves the impression that the author is too dogmatic in a field in which so much is as yet unsettled. Thus he states (p. 24) as demonstrated facts that all the ductless glands "are supplied with vegetative nerves, and their function is thus in a great measure regulated by the nervous system"; and further that "the ductless glandular system influences the excitability of the vegetative (sympathetic) nervous system by the hormones they give off to the circulation." Both of these generalizations, as applied to all the endocrine glands, are quite in advance of facts, and time may prove them in part contrary to facts.

Falta regards all endocrine gland diseases as due either to a hypo-activity or a hyperactivity of the glands. Thus he speaks of diseases due to hyperfunction of the parathyroids and the suprarenals, "hypergenitalism," etc. This is logical, and may be a useful working hypothesis; but the author does not always distinguish between working hypotheses and conclusions based on facts. In the chapter on diseases of the suprarenals the author bases all his discussion on the old vascular tonus theory of suprarenal function, despite the fact that this theory is rendered untenable by the work of Cannon, Hoskins and others in recent years. The absence of even a reference to such fundamental work can hardly be excused in a monograph of the ductless glands published in 1916.

The numerous illustrations are excellent, and would in some cases have been more useful if accompanied by more detailed explanations. The sixty-eight pages of references constitute one of the most useful parts of the volume. Many important papers are not found in this list, but are cited in the addenda given by the American editor at the end of each chapter.

COLON HYGIENE. Comprising New and Important Facts Concerning the Physiology of the Colon and an Account of Practical and Successful Methods of Combating Intestinal Inactivity and Toxemia. J. H. Kellogg, M.D., LL.D., Superintendent of the Battle Creek Sanitarium. Cloth. Price, $2 net. Pp. 393. Battle Creek: Good Health Publishing Company, 1915.

This book is written for the layman, yet "the writer does not desire to convey the impression that the sufferer from severe constipation can safely undertake to act as his own physician, but rather to enable him to cooperate with the wise up-to-date physician." The subject of constipation is discussed thoroughly in all its phases; but what is said could have been said in much less space, had there not been so much repetition. Many statements are repeated over and over again. The author may have thought this necessary to impress them on the lay mind; but too much repetition becomes tiresome, even to the layman. If the object of the book is to make the layman believe that he is sick and that his sickness is due to the fact that his bowels do not move often enough, it will probably accomplish its purpose. It is quite proverbial that when a lot of symptoms are detailed in an enticing manner to the layman the imagination immediately becomes active, and the symptoms are at once appropriated and become a part of the individual. If such is the case when a few symptoms are mentioned, what must be the effect when almost all of the ills to which flesh is heir are vividly described as due to constipation, "a disease so universal in civilized communities," that it "may justly be looked upon as among the fundamental causes of the race degeneracy which is becoming every day more apparent in all highly civilized communities." It is certainly assuming much to say that all highly civilized races are degenerating. It is freely admitted that constipation is a very common complaint, but its consequences are not nearly so calamitous as a few writers would have us believe. It seems to be a fad nowadays to attack the colon. Just because a few patients have had their colons removed and have lived, behold, the colon is a useless organ; the changes taking place in it are the cause of old age, ergo, take out the colon and live forever. Constipation is a common condition, and it is frequently harmful; but it is not the cause of all the ails of the flesh. If the constipated layman could only skip the parts that are overdrawn and read those that relate to proper exercises, diet, etc., he might profit by the book.

Miscellany

The Industrial Incidence of Tuberculosis

Some of the state laws provide for compensation to workmen, not merely for accidental injury, but for any disability arising out of and in the course of employment; that is, compensation for disease, provided it can be shown to be due to the work in which the employee is engaged. This makes the question of the incidence of disease in industry an important one in the administration of the law. It is also a complex problem; for a man who is failing in health owing to his occupation may change employment repeatedly, and the occupation in which he is engaged when he finally becomes incapacitated may not be responsible for his condition. E. F. McSweeney, who, with Prof. Selskar M. Gunn, was commissioned by the Massachusetts State Board of Labor and Industry and the Industrial Accident Board to investigate the industrial bearings of tuberculosis, in a preliminary report (Industry and Tuberculosis, *Journal of Outdoor Life*, April, 1916, p. 99), says that labor and occupation undoubtedly constitute an important factor in the "causes" of tuberculosis, but that no particular kind of work can be said to "cause" the disease. In the records of all the hospitals and sanatoriums examined, women of the home—housewives and domestics—led the list of occupational classes affected by tuberculosis, constituting from 22 to 28 per cent. of the total. Clerks, including salespeople, bookkeepers and stenographers, came next on the list in all sets of records. These two classes—houseworkers and clerks—show the influence of indoor confinement in the production of tuberculosis. Day laborers—workers on streets, roads, railroads, subway excavation, etc.—constituted the third largest class; in their case the favorable influence of outdoor occupation was offset by exposure to dust, long and uncertain hours, night work, temptation to drink, etc. Miscellaneous factory workers, including those employed in the making of buttons, corsets and typewriters, but not in the leading industries of the state, came next. The shoeworkers were fifth on the list, furnishing more tuberculosis patients than any other single industry in the state. Dust and poisons from blacking, dyes, polishes, etc., were regarded as the unhygienic elements in this industry. Mill operatives—workers in the cotton, hosiery, paper, silk, wool and worsted industries—came next. Teamsters, waiters and waitresses, seamstresses and dressmakers, tailors and tailoresses, stoneworkers, woodworkers, bakers, metalworkers, printers and jewelers are among the workers whose occupations show unduly high tuberculosis incidence. Tuberculosis seems to be the most serious occupational disease, but, owing to the difficulty of putting exact responsibility for the condition on the industry in which it occurs, McSweeney believes that tuberculosis workers will seldom be able to benefit from the Massachusetts compensation law. There is much need, he concludes, for the study of the exact effect of occupation on disease.

Medicolegal

Injury Followed by Gonorrheal Infection — Not Loss of Eye

(Cline vs. Studebaker Corporation et al. (Mich.), 155 N. W. R. 519)

The Supreme Court of Michigan reverses and sets aside an award, under the workmen's compensation act, that treated the injury as the loss of an eye, rather than as a partial loss. The court says that the fact that a piece of steel flew into the claimant's right eye in the course of his employment seemed fairly well established. But it was not shown that this flake of steel directly caused the subsequent impairment of vision; that, on the contrary, must be attributed to a gonorrheal infection which set in. Nor was it probable, from the testimony of the physicians, that the germ which caused the infection was on the steel itself. They stated, however, that such a germ might get into the eye from a towel, from washing utensils, from the straps or rails of a street car, and in similar ways. The burden was therefore on the claimant to show by a preponderance of evidence that the infection arose out of and in the course of his employment, instead of at some other time and in some other way. In short, under the circumstances, it was for the claimant to show that the infection was connected with the accidental entry of the steel into his eye. In instances like this, where the claimant himself is personally free from the disease, it is hardly possible that the source of infection can be shown absolutely by direct evidence. Nor is that necessary. That the claimant was himself free from the disease up to the time of the accident was the testimony of the physician who attended him, and the finding of the industrial accident board. The gonorrheal germ must have come from some outside source. It must also have been received not later than the time of the accident to have developed into the condition found by the physician two days afterward, according to his testimony. These conditions, in connection with the fact, as shown, that an injured eye is more susceptible to the infection than a normal eye, and with the further fact that at once, after the accident, a fellow workman examined the eye, using for the purpose a match wrapped in a piece of cloth, created a considerable degree of probability that the germ got into the eye in the attempt to remove the steel. And this probability was sufficient to warrant the board in finding that "the infection which destroyed the sight of the eye is not reasonably accounted for except as coming through or resulting from the accident." If the germ was introduced in an attempt to remove the flake of steel from the eye, it was a direct consequence of the accident, and arose out of and in the course of the employment. The attempt to remove the particle of steel was a natural and necessary result of its entry into the eye. The net result of tests by two experts was that, when using proper glasses, the claimant had 50 per cent. of his sight, while without them he had only 10 per cent. Under these circumstances it seems impossible to say that the injury resulted in the loss of the eye. The use of glasses is a very ordinary occurrence, both by the young and the old. Ninety per cent. of the sight is not lost when it can be diminished to 50 per cent. by the use of common appliances. And it is the duty of the sufferer to minimize the injury as much as he reasonably may. The statute does not provide compensation for the partial loss of an eye under such circumstances.

Restricting the Use of Second Hand Material to Protect Public Health

(People vs. Weiner (Ill.), 110 N. E. R. 870)

The Supreme Court of Illinois reverses a judgment of conviction of the defendant of violating the statute which took effect July 1, 1915, regulating the making and renovating of mattresses, quilts or bed comforters, and regulating the sale thereof. The court says that the provisions of Sections 1 and 2 of the statute are arbitrary and unreasonable, and must be held unconstitutional and void. The evidence showed that second hand bedding does not necessarily convey infectious or contagious diseases, and that a lawful business of selling or dealing in such may be carried on without danger to the public health. It is the nature of the previous use, condition or exposure in respect to contagious or infectious diseases which makes the use of second hand material dangerous in the manufacture of mattresses, comforters and quilts, and not the mere fact of the previous use of such material by other persons. It is eminently proper to require that material be free from germs of contagion and infection before being used in mattresses, comforters or quilts, whether the material be second hand or new; but the possible danger to health or safety does not justify the absolute prohibition of a useful industry or practice where the danger can be dealt with by regulation. The statute does not attempt to prohibit the use of second hand mattresses, but does prevent their ever again being used in the manufacture of other mattresses which are to be sold. To prohibit absolutely the use of such material in the manufacture of mattresses for sale when not inherently dangerous and when it may be rendered safe by reasonable regulation is an invasion of personal and property rights within the meaning of the federal and state constitutions. Again, it was argued that there was a discrimination between the manufacturers and dealers in pillows and manufacturers and dealers in mattresses, comforters and quilts, especially after they had been used, as there was no provision made as to pillows; that, so far as this act was concerned, material made second hand in the same way as the material in mattresses might again be made into pillows and sold without any regulation whatever. Under the decisions of this state this is class legislation. But the provision in Section 3 of the act requiring that material used in remaking mattresses, quilts and comforters for the person's own use must be sterilized does not violate any constitutional prohibition, and is a proper exercise of the police power. That same requirement could be made in an act with reference to the manufacture and sale of mattresses. Regulations to prevent fraud and deceit in such manufacture and sale could be very readily provided, so as to protect the public, without prohibiting the use of second hand material if properly renovated and sterilized.

A Waiver of Privilege

(Dewey vs. Cohoes & L. Bridge Co. (N. Y.), 155 N. Y. Supp. 887)

The Supreme Court of New York, Appellate Division, Third Department, reverses a judgment obtained by the plaintiff on account of a personal injury, and grants a new trial, because of what it holds was error in sustaining an objection to a hospital surgeon testifying for the defendant. The court says that the plaintiff swore to the facts of the injury and his condition, and called physicians who had attended him who swore minutely as to his condition. Some of them took, or assisted in taking, roentgenograms of the organs and parts of the body claimed to be injured. The testimony of his physicians put before the jury, with great minuteness and circumstance, his physical condition, especially at the time when he was at the hospital. The defendant called a surgeon, connected with the hospital, who had examined the plaintiff there at his request, and he was asked, "What did you find the man was suffering from?" Objection to the question was sustained, but the court thinks that the actual physical condition of the plaintiff while he was at the hospital was very material, and the defendant had the right to have the testimony of the surgeon on that subject. The plaintiff put his person before the jury as a basis for damages, and had it described by his physicians, and thereby waived any privilege, not only of the physicians he called, but also of other physicians, who examined him about the same time. It did not appear that the surgeon called by the defendant made his examination at the same time that the other physicians made theirs, but it does not seem that that fact was controlling. The examination was at the same time the doctor was treating him for the same trouble. It seems unfair that he could call certain of his physicians and refuse to permit others to testify, on the ground of professional privilege.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, DETROIT, JUNE 12-16.

Alpha Omega Alpha Society, Detroit, June 12.
American Academy of Medicine, Detroit, June 9-12.
American Association of Anesthetists, Detroit, June 12.
American Proctologic Society, Detroit, June 12.
American Therapeutic Society, Detroit, June 9-10.
Maine Medical Association, Portland, June 7-8.
Massachusetts Medical Society, Boston, June 6-7.
Montana State Medical Association, Miles City, July 12-13.
National Association for Study of Epilepsy, Detroit, June 16.
New Jersey Medical Society, Spring Lake, June 20-22.
Washington State Medical Association, Seattle, July 12-14.
Western Roentgen Society, St. Louis, June 9-10.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

One Hundred and Tenth Annual Meeting, held at Saratoga Springs, May 16-18, 1916

The President, DR. W. STANTON GLEASON, Newburgh, in the Chair

Examination of Eyes of Schoolchildren

DR. F. PARK LEWIS, Buffalo: In order that we may know how much importance to attach to defects of the eyes, we must have exact data as to their incidence, their character, their corrigibility and their influence in retarding the normal progress of a large number of individuals. Careful work has been done in Pennsylvania. In the report of 1914-1915, in the fourth class districts, 269,199 pupils were inspected; visual defects were found in 83,748, or 17.8 per cent.; 5,512 pupils had other eye defects. What disposition shall be made of such pupils in the classification and arrangement of the school? The methods employed in the correction of eye defects are not always well done; when the work is done for a poor child, the patient is usually referred either to a public dispensary or to an optician. The refractive work done in public dispensaries is too frequently done in a hurried and careless way.

Very few children beginning school life know how the eyes should be used, and it was suggested by a committee chosen by the National Educational Association, and later by a committee of women school principals in New York City, that the child, when he begins to use books, be taught how they should be used, and the following simple recommendations be printed on the first blank page of every schoolbook:

1. Take care of your sight; upon it depends much of your safety and success in life.
2. Always hold your head up when you read.
3. Hold your book 14 inches from your face.
4. Be sure that the light is clear and good.
5. Never read in the twilight, in a moving car or in a reclining position.
6. Never read with the sun shining directly on the book.
7. Never face the light in reading.
8. Let the light come from behind you or over the left shoulder.
9. Avoid books or papers printed indistinctly or in small type.
10. Rest your eyes frequently by looking away from the book.
11. Cleanse the eyes night and morning with pure water.
12. Never rub your eyes with your hands or an unclean towel, handkerchief or cloth.

Another reason why permanent records should be made of all schoolchildren's eyes is found in the workmen's compensation act. With the assumption of responsibility on the part of the employer for injuries received by the employee in the performance of his duties, there must be an assurance of the existence of a normal physical condition on the part of the workman who is thus protected; but if there is an abnormal condition present this must be known in order that the extent of the injury may be ascertained. If the examinations of the eyes of schoolchildren are standardized, and if these records are permanent and available, they would give us the important and necessary data concerning every individual in the state.

Practical Experiences in Medical Inspections in Rural Sections

DR. WILLIAM A. HOWE, Albany: During the first year of the administration of the medical inspection law, many impressive and varied experiences have arisen. Many grateful parents have written the department thanking it for the wonderful relief extended to their children. Thousands of children have been placed on a higher plane of physical fitness, thus enabling them to make more normal progress in school. Two children with congenital cataract, whose vision amounted to practically nothing, have been operated on successfully, restored to vision, and placed in school, where satisfactory progress is now being made. Three others had so little vision as to render regular school work impossible. Two children of school age have recently been placed in the New York School for the Blind at Batavia, where they will receive an academic education, be taught some vocation and be made self-sustaining citizens. Another child with a badly disabled foot following infantile paralysis has been successfully treated by tendon transplantation. Two pupils, who were incorrigible, impertinent, backward and unmanageable in school, improved promptly after the removal of septic tonsils and obstructing adenoids. Several cases of tuberculosis have been found among our teachers, while in one district this disease had existed among the pupils for nearly fourteen years. Many pupils throughout the state in either the pretuberculous or incipient stage of the disease have been greatly benefited by sanitary or institutional treatment. A few days ago one village district reported fifty cases of obstructed breathing among children of foreign parentage or from dependent families. These will be referred to specialists who have generously designated free services to deserving children. In another village certain schoolrooms are being utilized as a temporary hospital in which, under the supervision of an experienced nurse, physicians and surgeons are administering relief to local children. In Schenectady, seven rural schools have united in the employment of a school nurse who is devoting her entire time to inspecting the children and to the improvement of school and home conditions. This nurse, though employed only for the past three months, has already accomplished such splendid results as fully to demonstrate the practical value of such services. In another section of the state we find a rural teacher referring many of her children to specialists in Buffalo where physical defects have been relieved, thus insuring to pupils far greater progress in school.

The Neuropathic Child

DR. EDWARD B. ANGELL, Rochester: The best description of the neuropathic child is that given by Dr. Francis Warner of London, England, who has examined 100,000 schoolchildren. He describes the characteristic manifestations of the neuropathic condition, as headache, difficulty in getting to sleep, grinding of the teeth, delicate physical condition without actual disease, lack of appetite, and tendency to be fatigued easily. These children are generally well made in body and have good heads, and they have well cut features and fine skin and usually light complexions. There is a weakness and an overspontaneity. There are uncontrolled movements without coordination. Impressionability and imitativeness show that the child's mind is impressed by what it sees. With growth development there is power to arrest the motor concept and to modify or even deny its inhibition. Requiring the child to raise its arms and hold them straight out in front in a horizontal position is a test of the nervous condition and the degree of fatigue. If the latter are present the child does not hold both arms parallel, or drops one arm, or one hand, or in the very neurotic the knuckles of the hand are pointed directly backward. Self-control cannot be established too thoroughly for the growing child, since without self-control there is an unstable equilibrium which later gives rise to the vagaries of neurasthenia and hysteria. If one studies the nervous child he will find that his position may be one of erectness, of assurance or defiance, or it may be dropping and self-conscious, or one of weariness, or fatigue, the latter being more common in girls. Another habit easily acquired by the nervous child is that of introspection, and

this leads later to unstable equilibrium and self-consciousness to the detriment of efficient mental activity. I have observed seventy-five or eighty cases of typical nervous children and have found that alcoholism and insanity have entered in as factors in about one third of the cases, while the arthritic diathesis was present in about 30 per cent. In only one case did I find tuberculosis in the family, but tuberculosis probably played a more important part than this indicated in the transmission of an unstable nervous constitution. In about 25 per cent. of these cases the condition can be traced to abnormalities in pregnancy or delivery. Faulty metabolism, such as constipation, headaches, mental depression, irritability and a poor circulation are characteristic evidences of disturbed nutrition. There is defective nutrition in about two thirds of the cases, and nearly one third are the victims of night terrors. Fresh air is a most important factor in the treatment of this type of child. The Boy Scout movement is excellent in developing the correlation of muscular and physical activities, and teaching the boy self-control and how to adjust himself to life.

The Open Air School Child as a Type

DR. EDWARD DURNEY, Buffalo: Children of a certain type are being segregated and are regarded as unsuitable for treatment in fresh air schools. They are the children who are living under the wrong conditions of life, who have a heredity of alcoholism or epilepsy, are the subjects of faulty nutrition, and have abnormal nervous activities. Some of these children are the spoiled children of the so-called better families. The nervous conditions in these children range anywhere from chorea to partial recovery from infantile paralysis. The defects brought out by present methods of school inspection must be corrected if the children are to receive the full benefit of the fresh air treatment. The attitude of the children themselves toward these schools is the best argument in their favor. Records of the weight of these children have been kept, and the gain in weight that has been shown is a positive index of the improvement in their condition. The change from the ordinary school to the fresh air school is frequently accompanied by an increased interest in both work and play. There is often a mental deficiency accompanying the physical defects, and with the methods used in the open air schools these defects are sometimes benefited or removed. Among the children who would be improved by the open air school may be included a large number of children in the ordinary school.

The Effect of Malformations and Infection of the Oral Cavity of the Child on Its Future Health

DR. STEPHEN PALMORE, Poughkeepsie: Nothing is so important as the hygiene of the mouth of boys and girls, for on that depends the health of the men and the women of tomorrow. Malformations are of the utmost importance, and are so common that one rarely sees a normal conformation of the mouth and teeth. This I attribute to the mixing of the races and the fact that not enough time has elapsed to evolve a definite type. To the proper molding of the human face a full complement of teeth is requisite. Where there is malformation there is malocclusion, and the latter condition is the rule rather than the exception. The anatomy of the mouth and teeth is such that the loss of one tooth ultimately disturbs the balance of the whole. Therefore, one cause of dental deformity is the loss of one tooth. Thumb, lip and tongue sucking are another cause of deformity, bringing about malocclusion and a narrowing of the palatal arch, and nasal obstruction. It is important, therefore, for the rhinologist to work with the dental surgeon when it comes to the treatment of mouth deformities involving the palatal arch. In the demonstration of alveolar abscesses, the Roentgen ray has been a great help. Pyorrhea alveolaris is not a disease of childhood, but with proper prophylaxis and the correction of malocclusions it can be prevented. A clean tooth never decays; teeth in good occlusion are easy to keep clean, and therefore teeth in good occlusion never decay.

DISCUSSION

DR. JOHN L. HEFFRON, Syracuse: Refraction work is being done in Buffalo by a volunteer staff of dispensary doctors. This year the Department of Education of the city has undertaken to employ these doctors from the dispensary at a nominal salary as part time medical inspectors to care for the eyes of the schoolchildren. These men have had a good training in the dispensary, and as a consequence the school board gets good service.

DR. MOSES KESCHNER, New York: As a rule, the general practitioner gives the neuropathic child scant attention. When the mother brings such a child to me complaining of night terrors, bed wetting and nervous symptoms, I usually prescribe bromids and Fowler's solution and let it go at that. In this class of children one often has a greater problem to solve than in actual organic disease. The many details of environment and economics must be taken into consideration. These are the children that later fill the asylum, homes for epileptics and reformatories, and their treatment should be regarded as an important and serious problem.

DR. B. W. WHITBECK, New York: The records of the New York schools show that about 60 per cent. of the children present a condition of weak foot or flatfoot. I have inquired at Washington as to the disabling effects of flatfoot in the United States Army and Navy, and find that they are throwing out many candidates on account of this defect. Children with this defect are often backward in school, are tired, and will not play or eat. I saw a boy, who had been treated with tonics, sent to an oculist who prescribed glasses for the relief of headache, but all without avail. The boy finally went to the family physician who found that he had a hollow back and flat feet. This boy was treated with proper orthopedic appliances, and in a short time his general condition improved and he took off his glasses. It is not merely a question of whether the foot is flat but whether it is functionating. It is not so much a question as to whether the feet are flat as whether they are weak. Many persons have flat feet and yet go through life without symptoms. It all depends on whether or not the foot functions.

DR. FRANK OVERTON, Patchogue: I have been interested in the reference to cases in which private physicians failed to detect the defects of schoolchildren. In my own town there is efficient cooperation between the private physicians and the school inspectors. I understand that there are places where there is not this cooperation. It is one of the functions of this society to bring about such cooperation.

DR. EDWARD B. ANGELL, Rochester: We should call the attention of the general practitioner to these cases. There are many conditions that I did not refer to in my paper; I did not refer to dementia praecox. It is sometimes very difficult to tell whether one is dealing with neurasthenia or dementia praecox. I have had a case of dyspituitarism in a boy who presented feminine characteristics and an utter lack of any sense of responsibility. In this case treatment with pituitary extract has brought about great improvement both physically and mentally. Such cases show that something can be done by a careful study of these cases in youth. The points brought out as to the relation between flatfoot and hollow back and their effect on the general health are very important. Dr. Warner, of London, to whom reference was made in my paper, states that he has found many cases of hollow back and has observed that it bears some relation to flatfoot, but he has not attempted to explain it.

DR. JULIUS SCHILLER, Amsterdam: Physicians know what should be done for these children, but they are unable to do it because they do not have the means. The medical inspector knows the children in his schools who need glasses or need to have other defects corrected, but the parents do not have the means to have the work done. They cannot do much until basic economic conditions in the home are improved.

DR. A. P. SQUIRE, Rotterdam: Has any one tested for the Wassermann reaction in children having Hutchinson's teeth? What does this sign signify in schoolchildren?

DR. JOHN L. HEFFRON, Syracuse: I feel that the sign known as Hutchinson's teeth is sometimes due to a delay in the eruption of the teeth. I have not been able to discover that any one has made observations on this point.

DR. WILLIAM A. HOWE, Albany: The state department of health stands ready to make the Wassermann tests. They

have found a reasonable number of children with syphilis and have treated them in a successful manner.

DR. B. W. WHITBECK, New York: The examination of the teeth is very important. In orthopedic work all patients with arthritis are examined by the Roentgen ray in order to ascertain the condition of the teeth. When a focus of infection is found, the patient is put under treatment until this condition clears up.

DR. L. DUNCAN BULKLEY, New York: Nothing has been said as to the importance of thorough mastication. Mothers should be instructed to teach children to chew their food properly. Some device, such as aluminum or celluloid balls or a cardboard cuff around the upper arm, would prevent the child from thumb sucking.

(To be continued)

AMERICAN GYNECOLOGICAL SOCIETY

Forty-First Annual Meeting, held at Washington, D. C., May 9-11, 1916

The President, DR. J. WESLEY BOVÉE, Washington, D. C., in the Chair

SYMPOSIUM ON SYPHILIS IN ITS RELATION TO OBSTETRIC AND GYNECOLOGIC PRACTICE

Syphilis in Its Relation to Obstetrics

DR. EDWARD P. DAVIS, Philadelphia: Modern knowledge on this subject dates from the discovery of the *Spirochaeta pallida* in 1905-1906 as the cause of syphilis. The discovery of the Wassermann reaction as a means of diagnosis, and salvarsan in treatment are also important factors. Syphilis can be diagnosticated positively in a new-born infant by finding the spirochetes in the blood taken from the umbilical vein and from the tissues about the umbilicus and umbilical cord. Examination of the bodies of infants dying from syphilis soon after birth show the spirochetes abundantly present in the important viscera. A woman, apparently healthy, giving birth to a syphilitic infant is herself syphilitic, although she may show no clinical signs or symptoms for years. In these cases syphilis is conveyed from the ovum to the mother through the medium of the placenta. The mother is said to have latent syphilis and can nurse her child without disturbance in her own health, and with positive benefit to the child. She may, however, at any time develop symptoms of secondary or tertiary syphilis. The Wassermann reaction is unreliable as a positive test for syphilis in parturient women. It may give a positive reaction in cases of severe toxemia and eclampsia when syphilis is absent, and in some other conditions in which the mother's health is seriously disturbed. In the lack of a more reliable means of diagnosis, the Wassermann test should invariably be made in selecting wetnurses and in all suspicious cases.

Syphilis in the acute stage attacking a pregnant woman can often be checked promptly by the use of salvarsan. While the germs destroying syphilis may be destroyed, the toxins which they produce will usually cause death of the fetus. If syphilis occurs early in pregnancy, the best results for the mother and child are procured by mercurial treatment and potassium iodid. While skin lesions are present, hypodermic or intravenous injections of mercurial solutions are useful. In treating active syphilis in the new-born, salvarsan has been given in the cubital vein with good results. When salvarsan is used with the mother and child, the urine should be examined repeatedly to determine the presence or absence of arsenic, and the presence or absence of signs of irritation of the kidneys. Should traces of arsenic disappear from the urine, arsenic poisoning may be feared. Syphilis in parturient women greatly increases the mortality and morbidity for the mother on account of mixed infection and lesions of the genital organs. Unless promptly detected and treated, it is one of the most important causes of fetal death. No syphilitic man or woman should be allowed to marry unless he or she has been under observation for six years after the last appearance of symptoms of syphilis.

Syphilis in Relation to Some Social Problems

DR. SIGMUND POLLITZER, New York: The fact that syphilis can be transmitted from the syphilitic mother to her unborn child was recognized 400 years ago, but the fact that syphilitic children are born of apparently healthy mothers leads to the conclusion that syphilis may be transmitted to the offspring by way of the semen of the father without infecting the mother. In fact, paternal syphilis is regarded as the most frequent form in syphilitic heredity. More extended and clinical observation, the discovery of the spirochete on the maternal aspect of the placenta, and the results of the Wassermann test have completely changed our views in this respect. The transmission of spirochetes to the ovum may be regarded as a physical impossibility; a spirochete is three times as long as the diameter of a spermatozoid head, and, furthermore, an infected ovum will not develop into a fetus. Colles' and Profeta's laws are true only in the sense that the mother of a syphilitic child and the child of a syphilitic mother already have syphilis, and therefore apparently cannot acquire it. The apparently healthy mothers of syphilitic children invariably have a positive Wassermann reaction and generally present symptoms of syphilis if we follow them long enough. A Wassermann test should be made in every case of unexplained abortion.

A syphilitic man may marry if he has received three years of treatment and has remained free from symptoms for another year or two. Millions of happy marriages prove the wisdom of the rule, but the thousands that result in infection of the wives and birth of syphilitic children prove its inadequacy. The attempt to control the incidence of syphilis by segregation has proved of slight value, and, moreover, in Anglo-Saxon countries has encountered too much prejudice to permit of its enforcement. The control of syphilis must come through education of the public in the risks and dangers of illicit intercourse, and education of the physician in the importance of early diagnosis and proper treatment. I cannot refrain from contrasting the generous provision made for the care of the syphilitic in the hospitals of European cities with the attitude of our American hospitals, in most of which the patient with an active syphilis is refused admission.

Syphilis of the Internal Genital Organs in the Female

DR. GEORGE GELLHORN and DR. HUGO EHRENFEST, St. Louis: Syphilis is common enough in women to constitute a gynecologic problem in the widest sense. Not every disease in a syphilitic woman is syphilitic in nature, but syphilis, if present, will exert an influence of its own on coexisting diseases. Latent syphilis prevails more in women than in men. The course of syphilis in men differs in many points from that in women. To instance but one of the differences, the relative frequency of tabes and paresis in the two sexes is well known. Primary chancres of the vagina are rare, probably because of certain histologic and biologic characteristics of the vagina. Tertiary manifestations of the vagina are also extremely rare. They represent, as a rule, the continuation of secondary lesions in the vulva, uterus or adjoining organs. The isolated submucous gumma breaks down early and appears in the form of a more or less characteristic ulcer. The more destructive processes which eventually lead to the formation of fistulas and strictures almost always originate in structures surrounding the vagina. Tertiary lesions of the vagina do not exhibit characteristic symptoms, such as pain or discharge.

The primary chancre of the cervix represents the best known and most common type of the syphilitic affections of the female internal genitalia. Its frequency has probably been overestimated. Statistics based on a large number of observations have never shown a frequency over 1.5 per cent. of all primary chancres found on the genitalia. Syphilis manifests itself on the cervix in the form of macules, papules and ulcerations. These forms probably represent three successive stages in the development of a lesion caused by scattered accumulations of the spirochete in the squamous mucosa of the cervix. The parasite can readily be recovered from the secretion of any of the three forms, and this explains the great infectiousness of secondary lesions. The Wassermann reaction is positive in this stage.

Syphilis of the pelvic cellular tissue appears in the form of a diffuse gummatous infiltration which secondarily involves the pelvic peritoneum. In almost all instances a diagnosis of malignancy has been made. In our case the positive outcome of the Wassermann reaction, together with other unmistakable signs of tertiary syphilis about the outer genitals, aided in arriving at a correct diagnosis. Specific treatment produced amazingly quick improvement of an apparently hopeless condition.

Occurrence of Syphilis in the University of Michigan Obstetric and Gynecologic Clinic

DR. REUBEN PETERSON, Ann Arbor, Mich.: Out of 2,000 inpatients in the University Hospital, the proportion of syphilitics is 6 per cent. The percentage of syphilis in 381 cases in the university maternity was 4.7. In eighteen cases of syphilis among the number examined, only eight, or less than half, gave a history of syphilis. In only the same number (eight) were there positive physical signs of syphilis. As shown by the histories of the eighteen cases, there was a greater chance for the syphilitic mother treated by salvarsan and mercury to give birth to a living full term child than when no treatment was given during pregnancy. The newborn infants of the mothers so treated did not give positive Wassermann reactions, although undoubtedly they were syphilitic and later would probably show signs of the disease. A certain proportion of the new-born children of untreated syphilitic mothers will give positive Wassermanns. Out of 390 gynecologic patients subjected to the Wassermann test, twenty, or 5.6 per cent., gave positive reactions. In only five of the twenty-two syphilitic patients was there a history of syphilis.

Relationship of Syphilis to Miscarriage and Fetal Abnormalities

DR. F. L. ADAIR, Minneapolis: Among 1,095 obstetric cases there ewere 2,422 full term pregnancies, 197 abortions. 62 miscarriages, 84 premature births, and 8 unclassified cases. There were 76 still-births and 16 fetal malformations. These cases were studied for evidences of syphilis by the Wassermann reaction, and clinical and necropsy evidence. In those cases giving a history of abortion there were 621 pregnancies in 109 cases. There were 197 abortions in these cases, or approximately one to every three pregnancies. There were 13 syphilitic cases in which there were 74 pregnancies with 23 abortions, or approximately 1:3. In 83 cases without evidence of syphilis there were 464 pregnancies, and 142 abortions, or about 1 to 3. Apparently pregnancy does not end much more frequently during the first three months in those affected with syphilis than in those who are free from the disease. Forty patients had 62 miscarriages in 202 pregnancies, or approximately 1:3. Seven patients with syphilis had 10 miscarriages in 27 pregnancies, or about 1:3. Thirty patients without syphilis had 49 miscarriages in 161 pregnancies, or approximately 1:3. There were 68 cases with 84 premature births in 241 pregnancies, or 1:3. There was evidence of syphilis in about one third of these mothers. Congenital syphilis appeared in 5 of 50 infants born in the hospital. Of the 50 who were stillborn, syphilis was demonstrated in 4. This means that 9 of 50 premature infants were proved syphilitic. There were 64 mothers who had 76 stillbirths. The Wassermann reaction was positive in about one tenth of these cases. Four of 34 infants born in the hospital were proved to be syphilitic, or about 1:8. Two of 15 deformed infants were born to syphilitic mothers. There was evidence of syphilis in 2 of 11 cases of hydramnios. Two of 5 cases of hemorrhage of the new-born were apparently due to syphilis.

How Closely do the Wassermann Reaction and the Placental Histology Agree in the Diagnosis of Syphilis?

DR. J. MORRIS SLEMONS, New Haven, Conn.: The Wassermann reaction in the mother's blood and the microscopic examination of the placenta were carried out in 360 consecutive confinements. There was absolute agreement between the serologic test and the result of study of the chorionic villi in 345 cases, or 95 per cent. Occasionally the placental findings are more reliable than the Wassermann. Then, again, the Wassermann may be more accurate than the placenta, and this is most likely to be true in postconceptional syphilis. Accurate diagnosis of syphilis in obstetric patients requires both the Wassermann reaction and the study of the placenta. The freshly teased chorionic villi should be examined as a routine. If their appearance raises suspicion of syphilis, hardened and stained sections of the placenta must be studied and the Wassermann reaction in the mother's blood must be determined. Irrespective of the teased villi, both these observations should be made whenever the fetus is premature, macerated or stillborn.

Experimental Syphilis

DR. F. W. BAESLACK, Detroit: Attempts at immunization by means of *Spirochaeta pallida* vaccines were made and the occurrence of agglutinins in the serum of animals treated with suspensions of dead spirochetes was noted. The absence of immunity was demonstrated by the ability to reinoculate animals which had recovered spontaneously or subsequent to treatment. An altered reactivity of the body is the possible explanation for the occurrence of the lesions peculiar to the various stages of syphilis.

Syphilitic Fever

DR. FREDERICK J. TAUSSIG, St. Louis: The rare mention of this symptom in gynecologic literature is out of proportion to the comparative frequency of its appearance. A positive diagnosis of syphilitic fever can be made only rarely, but the diagnosis can be made with great probability in certain groups of cases. Syphilitic fever may be divided into: 1. Secondary syphilitic fever occurring at the outbreak of the eruption, lasting usually only three to four days with a rise of temperature of 99.3 or 100 F. Fournier estimates that the symptom occurs in 20 per cent. of all syphilitics. 2. Late secondary syphilitic fever may complicate pregnancy or gynecologic conditions; it is usually prolonged with a higher degree of temperature. In these cases the diagnosis is based on the positive history and evidence of a syphilitic infection, the exclusion of other febrile diseases, and the immediate and permanent result of antisyphilitic treatment. 3. Tertiary syphilitic fever is of greater diagnostic importance than the two previous groups because the symptoms and history of syphilis are often absent and only the four plus Wassermann points the way to an interpretation of the continuous fever. The cause of syphilitic fever is, in all likelihood, to be found in the entrance of spirochete toxins, in addition to the organisms themselves, into the circulation. Probably individual predisposition is also an important factor in the rise of temperature. That fever occurs occasionally after injections of mercury or salvarsan, when it may be fairly assumed that large quantities of endotoxins are liberated from the dead spirochete, is additional confirmation of the toxic interpretation of syphilitic fever.

(To be continued)

Campaign Against Degenerative Diseases of Adult Life.—The April number of the *Monthly Bulletin* of the department of health of New York City contains interesting statistics with reference to the mortality from chronic disease of the heart, kidneys and arteries and a careful analysis of their significance by Dr. Charles F. Bolduan, director of the Bureau of Public Health Education. These form the basis for a plan of education for the control of this class of diseases. This plan includes the devices that have been employed in campaigns directed against tuberculosis and infant mortality. It would also include a large exhibition of adult hygiene on the lines of the exhibition held in Dresden three years ago, the key of the exhibition being prevention, early recognition and competent medical care. In connection with this plan the department of health announces that it is prepared to undertake a sanitary survey of any industry, trade or group of manufacturing or mercantile establishments with a view of appraising existing conditions and in order to show employers and workers alike what can be accomplished through a system of voluntary hygienic and sanitary control.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

May, XL, No. 3, pp. 373-501

1 Falling Reflex of Cats. H. R. Muller and L. H. Weed, Baltimore.
2 *Circulation of Blood in Man at High Altitudes. Effects of Physical Exertion on Pulse Rate, Arterial and Venous Pressures. E. C. Schneider, G. E. Cheley and D. L. Sisco, Colorado Springs, Colo.
3 *Appearance of Sugar in Secretions of Digestive Tract Following Administration of Phlorhizin. R. G. Pearce, Chicago.
4 *Destruction of Hormones, Proenzymes and Enzymes by Ultraviolet Radiation. W. E. Burge, W. R. Fischer and A. J. Neill, Urbana, Ill.
5 Excitation of Phrenic Nerve by Action Current of Heart. F. H. Pike, New York.
6 *Character of Innervation of Kidney. R. Burton-Opitz, New York.
7 Some of General Physiologic Properties of Diaphragm Muscle as Compared With Certain Other Mammalian Muscles. F. S. Lee, A. E. Guenther and H. E. Meleney, New York.
8 *Some Chemical Properties of Certain Mammalian Muscles. F. S. Lee, E. L. Scott and W. P. Colvin, New York.
9 Action of Temperature and Humidity on Working Power of Muscles and on Sugar of Blood. F. S. Lee and E. L. Scott, New York.

2. **Circulation of Blood at High Altitudes.**—The observations recorded in this paper were made on Pike's Peak. Briefly, Schneider's study shows that by the first morning spent at the high altitude the pulse rate had accelerated in the group that ascended by train and remained well to from 4.5 to 15.6 per cent., in the mountain sick group to from 22.4 to 46.6 per cent. and for those who walked up to from 26 to 66 per cent. The mean pulse rate showed the same group differences, while the variations throughout the day were the same for each. The frequency of the heart beat due to changes in posture was not materially different at the two altitudes. The observations on the after effects of walks for fifteen minutes at the rate of three and four miles per hour and of a short rapid run show that physical exertion accelerated the heart rate more at the high than at a low altitude, and that the altitude influence was disproportionately increased as the amount of work was increased. For moderate exertion the effects were greater during the first days of residence. After a time the three-mile walk did not call forth the altitude acceleration, but it persisted after the four-mile walk even after two weeks of residence. The time required for the heart rate to return to normal was also prolonged during the first days but was reduced with acclimatization. The short rapid runs were exhausting at the high altitude; the heart was accelerated on an average of 120 beats per minute and the rate remained high for several hours thereafter. During work on a stationary bicycle at the high altitude the heart rate increased to the maximum in the primary rise; while at the low altitude the maximum came later, in the secondary rise.

Arterial pressures were higher after a given form of work at the high than at the low altitude. The influence of lowered barometric pressure was the more pronounced the more vigorous the exertion. The reaction was most conspicuous during the first days of residence, but while lessened by acclimatization it did not wholly disappear after a residence of two weeks. The average rise in the systolic pressure after a short quick run was 61 mm., while the average pressure for each of three men was 177, 195 and 197 mm. Hg. These high pressures were similar to those caused by a maximum lift of weights. The delay in the return to normal was as prolonged as after exhaustive exercises. During work the arterial pressures rose more rapidly at the high than at a low altitude; the rate of rise was not as rapid as that of the pulse rate. Ordinarily at the low altitude the arterial pressure reaches its maximum before the pulse rate, but at the high altitude the pulse rate first comes to the maximum. Physical work caused in five out of seven subjects a greater rise in the venous pressure at the high than at the low altitude. The maximum, however, was on the average less than at the low altitude because of the fact that the normal venous pressure was lower on Pike's Peak. The exertion of walking up the Peak is exhausting and puts a serious strain on the heart.

3. **Effect of Phlorhizin on Digestive Secretions.**—The reducing power of the pancreatic, gastric and salivary secretions in normal and phlorhizinized dogs was investigated by Pearce and he found that they do not contain an appreciable amount of reducing substance. The pancreatic and gastric juices and sometimes the salivary juice of dogs rendered glycosuric by phlorhizin, contain a reducing substance. In the case of the pancreatic juice, this is dextrose.

4. **Action of Ultraviolet Radiation on Enzymes, Etc.**—According to Faraday's law the amount of silver deposited on the cathode, when an electric current is passed through a solution of silver salt, is proportional to the amount of current passed, that is, to the energy applied. It has been shown that this same relation exists between the amount of current passed and the destruction of enzymes. In view of these facts it would seem that the relation between the decrease in enzyme activity and exposure to ultraviolet radiation should be linear. The experiments reported by Burge, Fischer and Neill were carried out to see if this was true. They tested epinephrin secretion and cholagogues, trypsin, trypsinogen, pepsin, ptyalin, amylopsin and enterokinase. The rate of destruction was found to be proportional to the amount of energy applied, except that the cholagogic activity of bile was not affected by exposure to ultraviolet radiation.

6. **Innervation of Kidney.**—The experiments cited by Burton-Opitz confirm his previous contention that the innervation of the kidneys is unilateral and enable him to explain the peculiar changes in the blood supply of these organs which he obtained on contralateral stimulation of the splanchnic nerves. The initial increase in the flow is attributed correctly to the rise in the general blood pressure, because as the kidney on the opposite side is not directly affected by the stimulation, its vascularity must be subject to the changes in the arterial driving force. The subsequent decrease in the blood supply is caused by the secondary constriction of the renal blood vessels by the epinephrin.

8. **Chemical Properties of Certain Mammalian Muscles.**—This paper contains the results of a determination of the chemical elements other than carbon, hydrogen and oxygen and of the glycogen occurring in four muscles of the cat, namely, the diaphragm, the extensor longus digitorum, the sartorius and the soleus; together with an endeavor to correlate those results with certain of the physiologic properties of the same muscles. The authors found that the quantity of lipin sulphur and of water-soluble sulphur is least in the diaphragm, greatest in the soleus, and intermediate in the extensor and the sartorius; that is, the quantity of nonprotein sulphur varies inversely to the order in which most of the general physiologic properties of the muscles are expressed. The ratios betwen the lipin sulphur and the lipin phosphorus and between the water-soluble sulphur and the water-soluble phosphorus vary directly as most of the general physiologic properties of the muscles. The protein sulphur varies directly as most of the general physiologic properties of the muscles, and is possibly to be correlated with muscular respiration. The glycogen content is greatest in the diaphragm, least in the soleus, and intermediate in the extensor and the sartorius. It thus varies directly as most of the general physiologic properties of the muscles, and is to be especially correlated with their reducing power and their working power. For each muscle there seems to be a specific ratio between the potassium and the sodium.

Boston Medical and Surgical Journal

May 18, CLXXIV, No. 20, pp. 703-738

10 How Massachusetts Provides for Its Mentally Ill. L. V. Briggs, Boston.
11 Hallux Rigidus; Report of Cases. C. F. Painter, Boston.
12 Use of Duodenal Tube for Diagnosis and Treatment. (Concluded.) F. W. White, Boston.
13 Chronic Inversion of Uterus; Report of Cases. J. C. Hubbard, Boston.
14 Case of Pregnancy and Labor Following Resection of Ovary. F. W. Johnson, Boston.

Bulletin of Johns Hopkins Hospital, Baltimore

May, XXVII, No. 303, pp. 121-156

15 *Nitrogen Metabolism During Pregnancy. K. M. Wilson, Baltimore.
16 *Functional Significance of Mitochondria in Toxic Thyroid Adenomas. E. Goetsch, Baltimore.
17 *Renal Diabetes; Report of Case. D. S. Lewis and H. O. Mosenthal, Baltimore.
18 Bilateral and Complete Trigeminal Paralysis Without Involvement of Other Cranial Nerves. C. M. Byrnes, Baltimore.
19 Digestion; Historical Survey. R. J. Cary, Lake View, Wash.

15. **Nitrogen Metabolism During Pregnancy.**—Observations were made by Wilson on the nitrogen metabolism in three normal pregnancies; in one patient for a period of four weeks, from the tenth to the fourteenth weeks of the pregnancy. The other two patients were studied for the last 133 and 101 days of their respective pregnancies and also for a short time in the puerperal period. A fairly liberal diet was allowed, both in quantity and character of foodstuffs used. The urine was collected for twenty-four hour periods, and carefully preserved; of these specimens daily analyses were made. The feces were preserved and analyzed weekly. Wilson found that in the perfectly normal pregnant woman, storage of nitrogen begins at a much earlier period than has hitherto been supposed; possibly the organism may acquire the capacity for storing nitrogen from the very beginning of the pregnancy. In the early months this storage is far in excess of the actual needs of the developing ovum, and the excess must be added to the general maternal organism. Storage of nitrogen continues throughout the entire duration of pregnancy, being most marked during the last few weeks, when the fetal needs are at a maximum. The nitrogen stored is greatly in excess of the actual needs of the developing ovum, so that, apart from the amount needed for the hypertrophy and development of the genitalia and breasts, a large proportion of the nitrogen stored is added to the general maternal organism as "rest material," though, concerning the form in which the reserve is stored, the author is unable to make any positive statement. The nitrogen capital of the maternal organism is thus increased, though the reserve supply may possibly be entirely exhausted during the puerperium and period of lactation.

In the healthy woman, who goes through a normal pregnancy, the period of gestation does not necessarily represent a "sacrifice of the individual for the sake of the species," but may actually be a period of gain. There is a relative increase in the percentage of urinary nitrogen excreted in the form of free amino-acids, though not necessarily an absolute increase in this form of nitrogen. There is also a tendency for the precentage of ammonia nitrogen to become increased during the last weeks of pregnancy, although at other times during the pregnancy there is practically no variation from the percentages noted in nonpregnant individuals on a similar diet.

16. **Significance of Mitochondria in Toxic Thyroid Adenomas.**—Attention is directed by Goetsch to the determination of glandular function, especially in a gland presenting so many variations in its pathologic anatomy as the thyroid gland. He feels that in the study of the pathologic anatomy of the thyroid gland, the mitochondria will prove to be a better index of the thyroid activity than the histologic criteria heretofore applied. Since the mitochondria occur normally in the thyroid cell, and since they are present in greatly increased numbers in the adenomas associated with symptoms of hyperthyroidism, it would seem probable that they are correlated with an overproduction of an otherwise normal secretion produced by the thyroid cell. It is interesting that exophthalmos is so rarely, if ever, associated with thyroid adenomas. Goetsch suggests that perhaps there is a very different form of intoxication in the true Basedow's disease. In the latter the thyroid gland, just as in the case of the toxic adenomas, shows a marked increase in mitochondria over the normal. There are, however, several differences in these two conditions in the number, morphology, size and distribution of the mitochondria, a description of which is promised in a later report.

17. **Renal Diabetes.**—The patient whose case is cited by Lewis and Mosenthal showed glycosuria, but none of the other abnormalities characteristic of an impaired carbohydrate metabolism. A slightly diminished phenolsulphonephthalein excretion, the slight elevation of Ambard's constant above the normal, as well as the glycosuria, point to a depressed kidney function. The absence of any further subjective or objective signs, past or present, leads the authors to the conclusion that a renal glycosuria is an interesting anomaly, but of no importance to the organism as a whole.

Colorado Medicine, Denver

May, XIII, No. 5, pp. 135-166

20 Some Points in Eye Diseases for General Practitioner. F. E. Wallace, Pueblo.
21 Few of Many Lessons in Medicine and Surgery Taught by Present European War. C. Powell, Denver.
22 Silent Features of Tuberculosis of Kidney. O. Lyons, Denver.
23 *Rest of Individual Lung by Posture. G. B. Webb, A. M. Forster and F. M. Houck, Colorado Springs.
24 Osteo-Arthritis. H. W. Wilcox, Denver.
25 Mortality in Abdominal Surgery. E. C. Rich, Ogden, Utah.
26 Effects of Drying on Viability of Germs. J. M. Shapiro, Denver.

23. **Rest of Lung by Posture.**—The authors suggest to attempt to train tuberculosis patients to rest at night and during day time on the more afflicted side, and in addition to place a small firm pillow under this side to restrain to a greater degree its motion. The application of the principle suggested would seem to have been efficacious in many patients for a year past in reducing the amount of sputum, promoting healing, hindering relapses and diminishing fever.

Illinois Medical Journal, Chicago

May, XXIX, No. 5, pp. 321-400

27 Criminal Boy. Observations Based on One Hundred and Twelve Cases. W. O. Krohn, Chicago.
28 Ultraviolet Rays in Dermatology. E. A. Fischkin, Chicago.
29 Importance of Examination of Larynx in General Practice. N. Schoolman, Chicago.
30 Résumé on Foreign Bodies in Stomach; Report of Case. G. C. Amerson, Chicago.
31 Treatment of Nervous Diseases. J. Grinker, Chicago.
32 Neurasthenia. A. S. Hershfield, Chicago.
33 Meniere's Disease; Report of Case. O. Tydings, Chicago.
34 Advantages of Scientific Feeding in Certain Nervous States. A. R. Satterlee, Danville.
35 Bacteriology of Pneumonia. A. A. Day, Chicago.
36 Indications for Removal of Tonsils. F. J. Lesemann, Chicago.
37 Diagnosis and Elimination of Chronic Focal Infections Associated With Teeth. W. H. G. Logan, Chicago.
38 Some Common Errors in Practice of Obstetrics. H. M. Stowe, Chicago.
39 Prognosis of Nuclear Units. H. H. Seyl, Chicago.
40 Cases of Trichinosis With Remarks on Diagnosis. L. Bloch, Chicago.
41 Acute Otitis Media. R. H. Good, Chicago.

Journal of Bacteriology, Baltimore

January, I, No. 1, pp. 1-134

42 Genesis of New Science — Bacteriology. W. T. Sedgwick.
43 Pedagogics of Bacteriology. D. H. Bergey, Philadelphia.
44 Studies on Bacterial Nutrition; Utilization of Proteid and Non-proteid Nitrogen. L. F. Rettger, N. Berman and W. S. Sturges, New Haven, Conn.
45 Studies on Soil Protozoa and Their Relation to Bacterial Flora. J. M. Sherman, Madison, Wis.
46 *Culture Medium for Maintaining Stock Cultures of Meningococcus. C. G. A. Roos, Glenolden, Pa.
47 *Bile Compared With Lactose Bouillon for Determining Presence of B. Coli in Water. M. M. Obst, Washington, D. C.

46. **Stock Cultures of Meningococcus.**—The culture medium devised by Roos is a modification of the potato blood agar used by Bordet and Gengou for the isolation of *B. pertussis.* It permits of relatively slow growth of the meningococcus with apparent suppression of ferment formation, thus resulting in greater viability. Preparation of medium: 1. Prepare potato extract as follows: (*a*) Potato peeled, cut in small pieces and washed in running water for about two hours, 100 gm. (*b*) Water containing 4 per cent. double distilled glycerin free from acid, 200 c.c. (*c*) Mix and autoclave for forty minutes. (*d*) Allow to stand over night and strain through cheese cloth. 2. Make potato extract agar as follows: (*a*) Mix in an Erlenmeyer flask, potato extract, 50 c.c.;

sodium chlorid solution 0.65 per cent., 150 c.c.; agar 5 gm. (*b*) Heat in Arnold sterilizer until agar is melted, requireing from thirty minutes to one hour. 3. Tube without filtering, and sterilize, in autoclave for about forty minutes. 4. When wanted for use, melt the agar, cool to about 45 C. and add the desired amount of sterile defibrinated horse blood. The amount of blood to be added depends on whether or not the meningococcus has become accustomed to the medium.

47. **Bile Compared with Lactose Bouillon.**—Lactose bouillon used by Obst as a substitute for lactose peptone ox-bile permitted the development of about twice as many *B. coli* from water as the bile medium. Lactose bouillon costs less in money and labor. The difficulty of obtaining pure, fresh bile puts it almost out of the reach of many workers. The stored bile is proved to show progressive deterioration. Lactose bouillon can be prepared when desired and can be made more uniform. It need contain no precipitate to clog the inner tube or to affect the activity of the organism.

Journal of Biological Chemistry, Baltimore

May, XXV, No. 1, pp. 1-175

48 *Amino-Acid Minimum for Maintenance and Growth. T. B. Osborne and L. B. Mendel, New Haven, Conn.
49 *Synthesis of Hippuric Acid in Animal Organism. Excretion of Uric Acid After Ingestion of Sodium Benzoate. H. B. Lewis and W. G. Karr, Urbana, Ill.
50 Studies in Blood Relationship of Animals as Displayed in Compositions of Serum Proteins. Percentage of Nonproteins in Serums of Certain Animals and Birds. R. M. Jewett, Berkeley, Calif.
51 Toxic Action of Soluble Aluminium Salts on Growth of Rice Plant. K. Miyake, Berkeley, Calif.
52 Solubility Data for Various Salts of Lauric, Myristic, Palmitic and Stearic Acids. C. A. Jacobson and A. Holmes, Reno, Nev.
53 Separation of Lauric and Myristic Acids From Each Other and From Mixtures of Other Fatty Acids. C. A. Jacobson and A. Holmes, Reno, Nev.
54 Changes in H Plus and OH Minus Concentration Which Take Place in Formation of Certain Protein Compounds. C. L. A. Schmidt, Berkeley, Calif.
55 Fate of Normal A-Aminocaproic Acid in Phlorhizinized Dog. I. Greenwald, New York.
56 Admissibility of Ammonium Magnesium Phosphate as Form in Which to Weigh Phosphoric Acid. W. Jones, Baltimore.
57 Hydrolysis of Yeast Nucleic Acid With Ammonia. W. Jones and H. C. Germann, Baltimore.
58 Hydrolysis of Yeast Nucleic Acid in Autoclave. P. A. Levene and W. A. Jacobs, New York.
59 *Nature of Dietary Deficiencies of Wheat Embryo. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.
60 *Separation of Autogenous and Added Hydrocyanic Acid From Certain Plant Tissues and Its Disappearance During Maceration. C. L. Alsberg and O. F. Black, Washington, D. C.
61 Cyanogenesis in Plants. Studies on Tridens Flavus (Tall Red Top). A. Viehoever, C. O. Johns and C. L. Alsberg, Washington, D. C.
62 *Effect of Surgical Procedures on Blood Sugar Content. A. A. Epstein and P. W. Aschner, New York.
63 Formation of Specific Proteoclastic Ferments in Response to Parenteral Injection of Foreign Proteins. F. Hulton, Philadelphia.
64 Limit of Assimilation of Glucose. A. E. Taylor and F. Hulton, Philadelphia.

48. **Amino-Acid Minimum for Growth.**—Additional experiments are reported by Osborne and Mendel to show the part played by tryptophan and lysin in the metabolism of maintenance and growth. The quantity of these amino-acids available in the diet can be made the limiting factors which determine the nutritive equilibrium and possibilities for increment of size in an individual. They afford an important illustration of the "law of minimum" applied to essential nitrogenous components of the food supply.

49. **Excretion of Uric Acid After Ingestion of Sodium Benzoate.**—Coincident with the maximal elimination of the ingested benzoate during the first four hours after administration, the uric acid excretion was markedly diminished, a decrease of 50 to 70 per cent. as compared with the excretion during the corresponding periods of the fore and after days. No significant changes in the elimination of creatinin or uric acid resulted from the administration of large doses of sodium hippurate. The decreased uric acid excretion observed after benzoate ingestion would seem to be due to the effect of the benzoic acid itself and not to its conjugated, nontoxic derivative, hippuric acid. There was a slower elimination of the hippuric acid after the administration of sodium hippurate, than after benzoate administration.

59. **Dietary Deficiencies of Wheat Embryo.**—The experiments reported in this paper reveal the fact that the wheat embryo contains qualitatively all the factors essential for the promotion of growth and well-being in an animal, but these are not so proportioned that it can serve as a satisfactory diet without several modifications. The mineral content must be modified in certain respects before growth can proceed at all. The character of the proteins is excellent; no other proteins from plant sources which the authors have studied are superior to them. Rations containing but 10 per cent. of these proteins are wholly adequate for growth at the maximum rate. Both the fat soluble A and the water soluble B, the factors which must be supplied by an adequate diet, but whose chemical natures are as yet unknown, are present; the first, in moderate concentration; the second, in very high concentration as measured by the needs of the growing animal. Two per cent. of wheat embryo supplies enough of the water soluble B to promote growth at the normal rate for several months. There is contained in the wheat germ a substance which is distinctly toxic to animals. This is in great measure removed by extraction with ether, and is found in the fat fraction. The authors have not yet determined whether the toxicity is due to peculiarities in the chemical nature of the fats themselves or to something which is associated with the fats.

60. **Hydrocyanic Acid in Plant Tissues.**—Alsberg and Black show that the leaves of *Prunus virginiana* must be distilled with acid four hours before all of the hydrocyanic acid is liberated, whereas in Andropogon and Panicularia less than one hour is sufficient to liberate all hydrocyanic acid present. It is further shown that in macerating plant tissues that contain hydrocyanic acid a certain amount of the hydrocyanic acid present or of cyanid that may be added is so converted that it is not recoverable by distillation with sulphuric acid. This is not due to the action of enzymes or to the presence of glucose. It is here shown that in determining hydrocyanic acid in plants several methods in corroboration of each other must be used.

62. **Effect of Surgical Procedures on Blood Sugar Content.**—Seventy-seven cases were studied by Epstein and Aschner. In twelve cases in which they observed a hyperglycemia before anesthesia (a sugar content above 0.11 per cent.), it was evident from further examinations that the high sugar content was due to various associated factors, and not to any psychic disturbances. These were of the nature of obesity, nephritis, hypertension, fever and loss of blood as in menorrhagic conditions, in which a hyperglycemia is believed to be encountered frequently. That the hyperglycemia in these cases was due not to psychic factors was further evidenced by the subsequent determination of the blood of these patients, which showed that the hyperglycemia was persistent in many of them. Only four patients operated on under local anesthesia were examined, and from the results obtained it appears that not only was there no resultant hyperglycemia, but that a slight diminution in the blood sugar content takes place. Sixty patients operated on under general anesthesia were examined. In fifty-seven of the sixty cases there was a well marked increase in the blood sugar content after anesthesia and operation. In one case there was a rise of only 0.001 per cent. within the limit of error. In another case there was a decrease of 0.004 per cent., in a third a decrease of 0.006 per cent. The average results in all kinds of cases, regardless of duration, showed a decided increase after operation, and the persistence of a moderate increase twenty-four hours later. There was no difference between the effect of intraperitoneal operations and extraperitoneal operations on the sugar content of the blood. The anesthesia played the important rôle in the production of the hyperglycemia observed. The more marked increases in blood sugar content appeared when the anesthesia lasted one hour or more. The operation of nephrectomy had an especially marked effect in the blood sugar content and the operation of itself was responsible for a good part of the

hyperglycemia, over and above the effect of the prolonged anesthesia. Postoperative glycosuria was found in only one of fifty cases in which the postoperative urine was examined for sugar with Fehling's reagent. This was a plastic operation lasting fifty-five minutes.

Kentucky Medical Journal, Bowling Green

May, XIV, No. 5, pp. 235-290

65 Medical and Surgical Treatment of Tuberculosis. E. Morris, Oak Forest, Ill.
66 Purity in Life and Language of Physician. J. W. Crenshaw, Cadiz.
67 Hemophilia; Report of Case. H. M. Rubel, Louisville.
68 Care and Comfort of Surgical Patient. A. C. L. Percefull, Louisville.
69 Backache. S. P. Garrison, Bellevue.
70 What the Physician Owes Public. W. J. Gerding, Newport.
71 Commoner Diseases of Kidney. W. J. Gerding, Newport.
72 Medical Inspections of Schools. E. A. North, Newport.
73 Urinalysis in Life Insurance. L. T. Eckler, Falmouth.
74 Headache as Diagnostic Symptom. F. R. Burton, Chenoa.
75 Acute Rhinitis. J. F. Adams, Bagdad.
76 Eye Strain. J. P. Edwards, Middlesboro.
77 Acute Articular Rheumatism in Children. A. S. Brady, Greenup.
78 Condition for Which Hippocrates Bled. W. W. Morton, Bluefield.
79 Acute Septic Peritonitis. J. H. Caldwell, Cincinnati.

Laryngoscope, St. Louis

April, XXVI, No. 4, pp. 217-368

80 Index-Medicus and Digest of Otolaryngology for 1915.

Medical Record, New York

May 20, LXXXIX, No. 21, pp. 895-940

81 Some Mechanical Factors in Colonic Stasis. C. H. Peck, New York.
82 *Golfer's Foot. C. Cross, San Francisco.
83 Review of One Hundred and Thirty-Two Consecutive Operations for Fibroid Tumors of Uterus. E. G. Jones and D. F. Winn, Atlanta, Ga.
84 Two Cases of Syphilis of Lung. S. Bauch, New York.
85 Diet in Diabetes Mellitus as Modified by Considerations of Nitrogenous Metabolism. E. E. Cornwall, Brooklyn.
86 Salt Water Ear. (Infection Due to Sea Bathing). H. B. Blackwell, New York.

82. **Golfer's Foot.**—Golfer's foot is a term applied by Cross to an acute condition of the foot due to distortion as a result of broken arch in the anterior metatarsal curved area.

Military Surgeon, Washington, D. C.

May, XXXVIII, No. 5, pp. 483-600

87 Etiology of Typhus and Louse Extermination, From Viewpoint of Sanitarian. H. G. Beyer, U. S. Navy.
88 Instruction of Enlisted Sanitary Personnel of Organized Militia. C. W. Comfort, Jr., Conn. N. G.
89 Experiences in German Reserve Hospital Under Auspices of American Red Cross. E. A. Hamilton, Ohio N. G.
90 Organization and Problems of War Hospital. J. M. Flint.
91 American Surgeons Under Fire. J. S. Schmitt.
92 Epidemic of Dysentery at Fort Shafter, Hawaii; Three Cases of Hiss-Russell or "Y" Bacillus Infection. G. M. Van Poole, U. S. Army.
93 Epidemic of Bacillary Dysentery Due to Hiss-Russell Bacillus. M. A. Delaney, U. S. Army.
94 Bacillary Dysentery, Recent Epidemic at Fort Shafter, Hawaii Territory, From Laboratory Aspect. F. H. Foucar, U. S. Army.
95 New Rôle of American Red Cross. J. R. Kean, U. S. Army.

New York Medical Journal

May 13, CIII, No. 20, pp. 913-960

96 Action of Carbon Dioxid Baths. S. Baruch, New York.
97 Mineral Bath Therapeutics at Mount Clemens. W. T. Lungerhausen, Mount Clemens, Mich.
98 Value of Springs at Saratoga. A. S. Downs, Saratoga Springs.
99 Oertel System of Graduated Exercise. W. H. Deaderick, Hot Springs, Ark.
100 Waters at Paso Robles, California. M. C. Myers, Paso Robles, Calif.
101 Longitudinal Inversion of Colon. R. T. Morris, New York.
102 Five Glass Catheter Test. A. L. Wolbarst, New York.
103 Immune Response in Pulmonary Tuberculosis. E. Bonime, New York.
104 Surprises for Diagnostician Revealed by Pathologist. W. G. Baetz, Woodhaven.

Northwest Medicine, Seattle, Wash.

May, XV, No. 5, pp. 145-182

105 *Auricular Flutter; Report of Cases. M. H. Tallman, Boise, Idaho.
106 Appendicitis. P. Rockey, Portland, Ore.
107 Id. H. A. Shaw, Seattle.
108 Surgery of Alimentary Canal. C. P. Thomas, Los Angeles.
109 Backache From Viewpoint of Orthopedist. J. C. Graves, Jr., Spokane.
110 Vaccine and Serum Therapy. E. R. Dumke, Ogden, Utah.
111 Causes Underlying Migratory Diathesis in Physicians. J. P. Kane, Tacoma.

105. **Auricular Flutter.**—A classification by Tallman of fifty-eight cases demonstrates three different types: (1) flutter in an apparently normal heart; (2) auricular flutter supervening during the course of chronic heart disease; (3) auricular flutter with partial and complete heart block. The study of the radial pulse demonstrated that the rate and rhythm varies greatly in the different cases and at different times in the same case. When the pulse is responding at from 130 to 160 beats per minute, a 2:1 rhythm is present which is usually regular and presents many alternations. In only five cases were the polygraphic characteristics of auricular flutter definite and in accord with the clinical findings. The duration of flutter, Tallman says, has apparently but little effect on the results of medication. With the slowing of the ventricular rate the objective and subjective symptoms of flutter rapidly disappear. In his experience digitalis must be given in large doses, frequently increasing the dose to the point of physiologic tolerance. In cases of partial block, he says, it is well to proceed carefully and slowly, as in these cases life and comfort depend on the long continued use of this remedy. In many cases of auricular flutter there is a tendency to recurrence which responds to treatment equally as well as the first attack. When normal rhythm cannot be secured, sufficient digitalis should be taken to reduce the pulse rate to from 60 to 70 beats per minute. In cases of extreme urgency strophanthin intravenously has given marvelous results in his cases.

Ohio State Medical Journal, Columbus

May, XII, No. 5, pp. 305-376

112 Classification and Treatment of Diarrhea in Childhood. F. H. Lamb, Cincinnati.
113 Harrison Antinarcotic Act as It Relates to Practicing Physician. C. H. Wells, Columbus.
114 Treatment of Chronic Intestinal Intoxication. J. H. Schroeder, Cincinnati.
115 Coloboma of Eyelid. L. K. Baker, Cleveland.
116 Medical Fellowship, Need of Hour. B. R. Miller, Tiffin.
117 Lymphoblastomas of Gastro-Intestinal Tract; Case of Hodgkin's Disease of Stomach. E. Scott and J. Forman, Columbus.
118 What Constitutes Ideal Method for Admission of Mental Patients to State Institutions. E. L. Braunlin, Dayton.
119 Office Practice in Rectal Diseases. S. Englander, Cleveland.

Ophthalmic Record, Chicago

May, XXV, No. 5, pp. 217-270

120 Refraction of Myopes — Consideration of Current American Teachings. E. Hill, Chicago.
121 Etiology of Iritis as Determined by Laboratory Methods and Its Treatment, Especially by Bacterins. W. Reber, Philadelphia.
122 Linear Method of Cataract Extraction. Cases Suitable for It and Its Advantages. W. H. Wilder, Chicago.
123 Experience in Cataract Operations. S. B. Muncaster, Washington, D. C.
124 *Case of Orbital Endothelioma. C. A. Leenheer, Chicago.

Public Health Journal, Toronto

May, VII, No. 5, pp. 231-286

125 Social Service and Hospital Efficiency. H. R. Y. Reid.
126 Feebleminded and Public Schools. C. G. Fraser, Toronto.
127 Woman's Work Before Marriage. J. Martin.
128 Physician in Industry. M. W. Alexander.
129 State Health Organization. C. V. Chapin, Providence, R. I.
130 Dental Path; Its Importance as an Avenue to Infection. T. B. Hartzell and A. T. Henrici, Minneapolis.

Southern Medical Journal, Birmingham, Ala.

May, IX, No. 5, pp. 387-478

131 *Dietetic Treatment of Bronchial Asthma. A. Eustis, New Orleans.
132 *Quinin and Urea Injections in Hyperthyroidism. L. F. Watson, Oklahoma City.
133 Relation of Eye Grounds to Work of Internist. G. C. Lechenger, Houston, Texas.
134 Etiology of Pellagra With Especial Consideration of Phenomena of Sensitization to Maize and Sugar-Cane Products. R. Blosser, Atlanta, Ga.
135 Possible Cure for Pellagra. W. F. Cole, Waco, Tex.

136 Negro a Menace to Health of White Race. M. L. Graves, Galveston, Tex.
137 Plea for National Committee on Eradication of Malaria. F. L. Hoffman, Newark, N. J.
138 Treatment and Complications of Malaria. W. E. Deeks, New York.
139 *Use of Sodium Citrate in Transfusion of Blood by Direct and Indirect Methods. W. S. Carter, Galveston, Tex.
140 *Reliable Method of Blood Transfusion; Report of Cases. A. O. Singleton, Galveston, Tex.
141 Fibroids Complicating Pregnancy; Report of Cases. W. Kohlmann, New Orleans.
142 *Arsenobenzol, Preliminary Report of Sixty Injections. L. Thompson, Hot Springs, Ark.
143 Study of Five Hundred Tonsil Enucleations With Beck-Pierce Tonsillectome. H. Dupuy, New Orleans.
144 Tonsillectomy According to Sluder Technic. P. M. Farrington, Memphis, Tenn.

131. Abstracted in THE JOURNAL, Dec. 11, 1915, p. 2119.

132. **Quinin and Urea Injections in Hyperthyroidism.**—Watson has used quinin and urea injections for hyperthyroidism over 400 times. He believes the greatest field of usefulness for the injection will be found in those cases of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of toxic goiter too ill to warrant any form of immediate operative procedure.

139. **Sodium Citrate in Transfusion of Blood.**—Carter has found sodium citrate to be a satisfactory anticoagulant when used in the cylinder for direct transfusion in 2 per cent. solution. Transfusion can be continued from 2.5 to 3 times longer with a 2 per cent. citrate solution than can be done with physiologic solution. A solution of sodium citrate is as efficient as a solution of hirudin, as shown by the amount of blood transfused or by the time of transfusion. Sodium citrate does not lessen the coagulability of the blood and is not toxic in the amount used either for direct or indirect transfusion. The coagulability of the blood is temporarily increased immediately after transfusion in which sodium citrate is used, either by the direct or indirect methods. The lethal dose of sodium citrate in dogs is about 1.0 gm. per kilogram of body weight when dilute solutions are injected. Even when a concentrated solution is used it is not more than 0.5 gm. per kilogram. A 0.2 or 0.3 per cent. solution of sodium citrate is sufficient to prevent coagulation and does not have any toxic effect in the amount used for indirect transfusion in man.

140. **Reliable Method of Blood Transfusion.**—A glass graduated flask or container, open at the top, with the bottom drawn out into two arms, or in a "U" shape, is used by Singleton. The two ends of the "U" are inserted into the donor's and recipient's veins, respectively. A rubber connecting tube leads from the top of the container to the pressure bottles. These bottles give a more uniform pressure, exerted continuously, over a longer period of time, and the pressure can be changed from positive to negative, and vice versa, more rapidly.

142. **Arsenobenzol.**—The effects obtained by Thompson with this preparation, he says, were as good as those obtained with salvarsan of German make.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

April 29, I, No. 2887, pp. 609-640

1 *Positions of Election for Ankylosis Following Gunshot Injuries of Joints. R. Jones.
2 *Method for Preparation of Nontoxic Dysentery Vaccine. H. R. Dean and R. S. Adamson.
3 Therapeutic and Reaction Effects of Kharsivan (British Salvarsan). H. C. Lucey.
4 History of Organic Compounds of Arsenic in Treatment of Protozoan Diseases. B. Moore.
5 Prevention, Symptoms and Treatment of Tetryl Dermatitis. E. Smith.
6 Case of Relapsing Paratyphoid "A" Infection. A. M. Kennedy and B. R. G. Russell.
7 New Apparatus for Bacterial Fermentation Tests; Fermentation Bulbs. S. Delépine.

1. **Ankylosis After Gunshot Injuries of Joints.**—Wounds must inevitably end in bony ankylosis. In what position should the joint be placed in order to be of the greatest use to the patient? This question is answered by Jones as follows: The arm should be abducted to about 50 degrees. The elbow should be slightly in front of the coronal plane of the body so that when it is at right angles and the forearm supinated, the palm of the hand is toward the face. As for the elbow joint, by far the greater number of men would prefer the fixation to be at just below a right angle—that is, about 100 degrees. In cases in which both elbows will become ankylosed it is necessary to fix the one at an angle of 80 degrees and the other at 100 degrees. In the forearm, if the movements of pronation and supination are lost, the radius should be fixed midway between pronation and supination. All injuries of the wrist joint should be treated with the wrist dorsiflexed. This is a priceless surgical axiom, the neglect of which is grave. Ankylosis of the hip joint should be encouraged in a position of very slight abduction, with thigh extended and very slight outward rotation. The knee should be fixed in an extended position. In ankylosis of the ankle, the foot should be kept at a right angle with the leg, so that the sole impinges on the ground in a slightly varus rather than a valgus position. In gunshot wounds and other injuries of the tarsus and metatarsus, the deformities to be feared correspond to the common static deformity of flat or pronated foot—that is to say, to pronation at the mid-tarsal joint, flattening of the longitudinal arch, and sometimes flattening of the transverse arch associated with pain in the metatarsophalangeal joints. Callus exudation added to plantar malposition results in a very crippled foot. In all gunshot injuries of tarsus and metatarsus the surgeon should take care during the later stage of healing not to bandage the sole rigidly against a flat foot piece, for if that be done every irregularity of bone will conduce to callosity when walking is resumed. It is necessary, therefore, at this stage to adjust a splint having an inside arch padded to conform to the natural shape of the foot. Eversion of the foot should be guarded against, and the hollow of the arch should, when possible, be emphasized. Later, the heel of the boot should be raised on the inner side to obviate eversion, and, if the metatarsals are involved, in order to allow of early walking, a bar should be placed across the sole of the boot behind the tread.

2. **Preparation of Nontoxic Dysentery Vaccine.**—The results of their experiments on forty-seven rabbits have convinced Dean and Adamson that it is possible by the use of dilute solutions of hypochlorous acid to prepare a Shiga vaccine, the injection of which is practically harmless to the rabbit, but is nevertheless followed by the production of a satisfactory degree of immunity.

Indian Medical Gazette, Calcutta

April, LI, No. 4, pp. 121-160

8 Cataract Operations "Old" and "New." M. Corry.
9 *New Method of Dressing Eyes After Cataract Extraction. F. P. Maynard.
10 Hypochlorous Acid as Antiseptic in Wounds. E. A. R. Newman.
11 New Apparatus for Continuous Irrigation of Wounds in Field. J. A. Shorten.
12 Flies in Jail. T. S. Ross.
13 Case of Sarcoma of Dura Mater. S. B. Pal.

9. **Dressing Eyes After Cataract Extraction.**—In order to produce an even pressure over the front of the eyeball Maynard uses swabs of wet sterilized wool applied as follows: Wool pulled, not cut, into pads, about an inch thick and the size of the dry wool pads usually used 3 inches in diameter, are sterilized by boiling in 1 in 5,000 biniodid solution. After the completion of the operation two of these, sopping wet, not squeezed out, are laid on the two eyes. With the straightened fingers they are gently pressed down over the eyes, so that the swab becomes molded to the eye and fill in the hollows round it. Over this swab is placed a wet pad consisting of lint or six layers of gauze and then a figure of eight bandage is applied fairly firmly. On opening the dressing next day the wool gauze will be found dry

and forming a complete mold of the eyeball and orbital opening. This wet molding method is very comfortable and produces no feeling of uneven pressure while it allows the eye to move easily. It is almost impossible to open the eyelids.

Journal of Laryngology, Rhinology and Otology, London

April, XXXI, No. 4, pp. 121-176

14 Partial Resection or Window Resection of Larynx for Intrinsic Malignant Disease. H. L. Lack.
15 Removal of Carcinoma of Hypopharynx With Plastic Restoration of Lumen. W. Mollison.
16 Results of Submucous Resection of Septum in Children. C. H. Hayton.

May, No. 5, pp. 177-224

17 *Atrophic Rhinitis (Ozena) and Tuberculosis. D. McKenzie.
18 Operative Treatment of Fibroma of Nasopharynx. A. J. Brady.

17. Atrophic Rhinitis (Ozena) and Tuberculosis.—Post-mortem evidence of the frequent association of tuberculosis and atrophic rhinitis (ozena) has been found by McKenzie as well as clinical evidence of the same (*a*) in the personal history and status of the ozenatous patient; (*b*) in the family history. Tuberculin tests showed active tuberculosis in the majority of cases of ozena. This was supported by the phenomena and results of the tuberculin treatment. There is some evidence tending to show that ozena is commoner in patients with phthisis pulmonalis than in the general community. There is also evidence tending to show that the acid-fast bacillus of the ozenatous crusts is an attenuated variety of the tubercle bacillus. Ozena resembles in many of its details other "paratuberculous" diseases. McKenzie's final conclusion is that ozena, as we see it in England, is a manifestation of tuberculosis.

Lancet, London

April 29, I, No. 4835, pp. 895-942

19 Infantile Mortality and Relative Practical Value of Measures Directed to Its Prevention. S. G. Moore.
20 Treatment of Gunshot Fractures. E. W. H. Groves and T. H. Brown.
21 Cases of Intestinal Ulcer Perforations at or Near Pylorus. W. H. Battle.
22 Cases of Pneumococcal Bronchitis. J. Goodhart.
23 Blood Findings in Epilepsy. R. H. Spangler.
24 *Significance of Presystolic Heart Murmurs. T. Lumsden.
25 *Typhoid Carrier. S. F. Dudley.
26 Case of Marked Postdiphtheritic Paralysis. W. A. Daley and C. V. McCormack.
27 Case of Os Tibiale Externum Simulating Fracture of Navicular Bone. C. P. G. Wakeley.

24. Significance of Presystolic Heart Murmurs.—It is most important from an insurance company's point of view, says Lumsden, that these cases should be carefully differentiated, but when the examiner is in any doubt it is wiser to treat all presystolic murmurs as serious than to risk accepting even at an increased premium patients suffering from so serious a condition as either mitral stenosis or aortic regurgitation. Even when after most careful examination it is ascertained that it is a case of "astenotic" presystolic murmur Lumsden recommends that several years should be added to the age of the patient when calculating the premium he ought to pay, since many of these cases have slightly abnormal mitral valves which are more apt to become incompetent than a normal valve. The number of years to be added must depend on the particular case, but should never be less than five. "Astenotic" cases can, however, be accepted for any ordinary occupations and even for posts of such importance as tramdrivers, chauffeurs, etc., since fainting is never a symptom of this condition per se. The existence of this murmur is not a bar to military service, nor to any form of sport or exercise. The murmurs discussed by Lumsden are: (*a*) Flint's murmur; (*b*) stenotic presystolic murmur; (*c*) astenotic presystolic murmur; (*d*) normal heart; (*e*) stenotic presystolic and systolic murmurs. The sound, he says, may be imitated by pronouncing; (*a*) Flint's: frrip, dupfrrrip, dupfrrrip; (*b*) stenotic: frrrip, dupup; frrrip, dupup; (*c*) astenotic: frrip, dup; frrrip, dup; (*d*) normal: lub dup; lub dup; (*e*) stenotic and systolic: frrripwhist dup; frrripwhist dup.

25. Typhoid Carrier.—The carrier whose case is discussed by Dudley was a sailor. His service on various ships was marked by the appearance of typhoid. He served on twelve ships on which fifty-three cases occurred subsequent to his enlistment. The following observations were made on this carrier while in the hospital: The urine was always sterile. Blood cultures were negative. The Widal reaction was positive up to a 1:150 dilution; it varied very slightly in strength. The appearance of typhoid bacilli in the stools was intermittent, three or four examinations being negative, followed by two or three positive results. In seventeen examinations of the feces at intervals of about three days *B. typhosus* was isolated seven times.

Medical Journal of Australia, Sydney

April 1, I, No. 14, pp. 277-296

28 Surgical Experiences at War. G. A. Syme.
29 *Meningococcal Carriers. S. T. Champtaloup and J. T. Bowie.
30 Insanity Due to Mitral Stenosis; Report of Cases. W. A. T. Lind.
31 Case of Paget's Disease (Osteitis Deformans). H. W. Connolly.
32 Case of Meningococcal Conjunctivitis. T. C. Ker and R. O. Douglas.

April 8, No. 15, pp. 297-318

33 Glancing Bullet Wounds of Skull. G. Owen.
34 Colloid Degeneration of Skin. L. Johnston and N. Paul.

April 15, No. 16, pp. 319-336

35 Neuroses and Psychoses in War. A. W. Campbell.
36 Bacteriologic Examination of Urines. L. B. Bull.

29. Meningococcal Carriers.—Forty-three civilian cases were fully investigated by Champtaloup and Bowie of which five (or 11.6 per cent.) were found to harbor the meningococcus in the nasopharynx. One individual developed meningococcal meningitis and died. Thirteen persons of the forty-three investigated had been in recent close contact with troopers on leave, and the bacteriologic finding was positive in three cases. Several of these contacts had been using antiseptic gargles and douches, however, before being examined. The remaining thirty had not to their knowledge been in contact with soldiers, and of these only two yielded positive results. Four of the civilian patients subsequently died. One developed meningococcal meningitis; a second, from whose nasopharynx a profuse growth of meningococci was obtained, developed a fatal streptococcal septicemia; a third, in whose nasopharynx no meningococci were found, developed acute hydrocephalus with no postmortem evidence of bacterial infection; and a fourth, also negative, developed tubercular meningitis. These fatal cases bear out the importance of a bacteriologic examination of all suspicious cases during an epidemic; otherwise they might have been returned as fatal cases of meningococcal infection.

Practitioner, London

May, XCVI, No. 5, pp. 447-572

37 *Some Surgical Procedures in Gunshot Fractures of Mandible. F. Eve.
38 Treatment of Venereal Diseases in the English Army. E. G. Ffrench.
39 Treatment of Syphilis in English Army. H. J. McGrigor.
40 Prevention of Venereal Diseases in English Army. O. May.
41 Eye Injuries of Warfare. A. W. Ormond.
42 War Neuroses. H. Campbell.
43 Dysenteries Other Than Amebic. G. C. Low.
44 Treatment of Tetanus. K. Goadby.
45 Epidemic Jaundice. A.-E.-A. Ismael.
46 Typhus Work in Serbia. L. M. Chesney.
47 Soldier's Heart. W. B. Thorne.
48 Case of Pneumothorax Secondary to Fracture of Ribs. A. Graham-Stewart.
49 Surgical Disabilities of Troops in Training. F. J. Cutler.

37. Surgical Treatment in Gunshot Fractures of Mandible.—Although he has used wire successfully in a number of cases, Eve considers transplantation of bone the ideal method for bridging over gaps in the mandible. He has not yet seen a case in which plating of a gunshot fracture of the mandible seemed advisable. He points out that in the earlier stage of the treatment of severe comminuted fractures of the mandible, special care should be taken to preserve fragments of bone which may be viable. If they necrose, removal may be effected later, and, meanwhile, they may prevent displacement while new bone is being thrown out.

Annales de Médecine, Paris

III, No. 1, pp. 1-108

50 Blood Plates in the Spleen. (Etude sur les plaquettes de la rate.) L. Le Sourd and P. Pagniez.
51 Typhoid and Paratyphoid Infections in the Vaccinated. M. Labbé.
52 *Mild Typhoid and "Febrile Disordered Digestion From Stomach Trouble." (Les formes légères de la dothiénentérie et l'embarras gastrique fébrile.) L. Bernard.
53 *Influence of Antityphoid Vaccination on Sero-Agglutination and Course in Typhoid and Paratyphoid Fever. (Etudes sur la fièvre typhoïde. I and II.) E. Rist.
54 Oculomotor Paralysis After Paratyphoid Fever. G. Guillain and J. A. Barré.

52. **Pseudo-Typhoid.**—Bernard says that it is often difficult to distinguish between mild typhoid and febrile gastric derangement, and yet they must be differentiated as the latter may reproduce the incomplete form of typhoid while in reality having no connection with typhoid. The colon bacillus is generally the one responsible for it.

53. **Typhoid After Vaccination.**—Rist comments on the fact that the number of typhoidal affections has apparently not diminished in the last year. The total number of cases averages about the same as before, but the cases of true typhoid are far below the usual number and paratyphoid cases have taken their place. Not much is gained, he remarks, if we merely substitute paratyphoid for true typhoid. This reduces the mortality of course, but the morbidity has not been modified, according to his statistics. Vaccination must ward off both typhoid and paratyphoid to accomplish its purpose.

Archives de Médecine des Enfants, Paris

April, XIX, No. 4, pp. 169-224

55 Pathologic Physiology of Defective Development and Debility in Infants. (Des hypotrophies et des cachexies des nourrissons.) P. Nobécourt. To be continued.
56 Anaphylaxis and Serotherapy in Children. J. Comby.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

January-March, V, No. 1-2-3, pp. 1-92

57 Histology of the Uterine Mucosa in Normal Pregnancy. A. Brindeau and Nattan-Larrier.
58 *Ovarian Cysts Following Evacuation of Vesicular Mole. (Signification clinique des kystes lutéiniques des ovaires se developpant après l'évacuation d'une môle hydatiforme.) P. Bar.
59 *Modifications of Pulse and Blood Pressure During Menstrual Period. (Des modifications du pouls et de la tension artérielle pendant la période menstruelle.) P. Balard and J. Sidaine.

58. **Ovarian Cysts Following Mole.**—Bar remarks that a cyst developing in the corpus luteum after evacuation of a hydatidiform mole is of too frequent occurrence to be merely a casual coincidence. Kroemer found them in 59 per cent. of the cases of mole he had compiled. Bar has encountered a similar case. The patient was a young woman who had had a hydatidiform mole removed three months before. The adnexa seemed to be normal at that time but three months later both ovaries were found transformed into masses of cysts with hyperplasia of the corpus luteum tissue. A small mass of molar vesicles was also found in the uterus. This case and similar ones on record teach the necessity for removing the uterus and adnexa in operating for a mole when there is the least suspicion of cyst formation in the ovaries. Also that after removal of a mole from the uterus, if the ovaries display a tendency to cystic degeneration, we can assume that elements of the mole are still proliferating in the interior of the uterus. The significance of ovarian cysts in these circumstances is still more pressing when there is a tendency to persisting uterine hemorrhage. Prompt operative measures are required, including the removal of the uterus.

59. **Modifications in Pulse and Blood Pressure During Menstrual Period.**—Balard and Sidaine review the literature on this subject and give charts of the findings during a three months' period in five young and healthy pupils in the midwifery school. The pulse showed decided variations in all but one of the young women, and the blood pressure varied in all, but not to such an extent as the pulse. There did not seem to be any regular rules for all cases or even for one person at all times, except that the pulse increased just before the onset of the menses and dropped back to normal or transiently below at the close. The charts demonstrate anew the complexity of physiologic phenomena.

Bulletin de l'Académie de Médecine, Paris

April 18, LXXV, No. 16, pp. 425-452

60 Appeal for Suppression of Garbage Picking Inside City Limits. (Sur la suppression du chiffonnage à Paris.) Wurtz.
61 *The Prevalence of Syphilis Not Recognized Before the War. (La syphilis, avant la guerre: méconnaissance de son extrême fréquence.) L. Landouzy.
62 Cerebrospinal Meningitis; Sixty-Four Cases. Neveu-Lemaire.
63 Rational Treatment of Syphilis Under Guidance of Wassermann Test. E. Jeanselme.

61. **Prevalence of Syphilis.**—For more than ten years Landouzy has examined all the patients in the Laennec clinic for general medicine, and has found a constant average of 5 or 6 syphilitics in every 32 women, that is, from 15 to 18.75 per cent., and of from 7 to 9 among every 32 men, that is, from 21 to 28.135 per cent. It should be more generally known he adds, that the so-called "smokers' patches" are practically pathognomonic of syphilis, and it is so easy to detect them at a glance. The Wassermann test will confirm their specific nature. The pandemic of syphilis even before the war demanded the public health measures which the war has imposed.

Le Nourrisson, Paris

March, IV, No. 2, pp. 65-128

64 Sterilization of Milk Without Heat Not Practicable to Date. (La stérilisation du lait: procédés dans lesquels on n'emploie pas la chaleur.) A. B. Marfan.
65 Localized Forms of Tuberculosis in Young Infants. (Formes cliniques de la tuberculose du nourrisson.) Combe.
66 Blood Serum More Reliable Than Milk for the Wassermann Test for Wetnurses. (La recherche d'une sensibilisatrice syphilitique dans le lait. Peut-elle servir au diagnostic de la syphilis des nourrices?) Merisset.

Paris Médical

April 22, VI, No. 17, pp. 393-408

67 Malaria in Flanders. (Le paludisme dans un coin des Flandres.) F. Rathery and R. Michel.
68 *Rapid Healing of Abscesses in the Neck Without Scars Under Filiform Drainage. (Guérison rapide et sans cicatrices des adénites et des abcès aigus et chroniques du cou.) H. Chaput.
69 Apparatus for Early Exercise of Wounded Leg in Bed. Amieux.

68. **Healing of Abscesses in the Neck Without Scars.**—Chaput refers to suppurating glands and abscesses in the neck of tuberculous or other origin. A small superficial abscess he pierces with a needle, drawing back with it two strands of silkworm gut which he knots to form a loop, repeating the process perpendicular to the first and thus providing crucial drainage. A deep abscess he lances at the tip, and through this minute incision he probes the depths and recesses; then with a Reverdin needle introduced through the incision he pierces the skin from within, at the poles of the abscess and the diverticula. Silkworm gut is drawn back with the needle and he ties the ends together at the central incision. This provides radiating drainage. A single drain may suffice if at the absolutely lowest point. A fine rubber bougie or spiral wire may answer likewise for the filiform drainage. With active suppuration, induration is liable to follow evacuation of the abscess if the patient is up and about. Hence it is better to leave the drains in place until all induration has subsided, keeping the patient in bed or at least confined to the room. Chaput says that filiform drainage is nothing new, but it has never been applied as generally as he advocates, and its advantages have not been appreciated.

Presse Médicale, Paris

April 20, XXIV, No. 23, pp. 177-184

70 Prophylaxis of Malaria. (La prophylaxie du paludisme.) H. Vincent.
71 *Causalgia and Its Treatment. (De la causalgie envisagée comme une névrite du sympathique et de son traitement.) R. Leriche.

71. **Burning Neuralgic Pain: Causalgia.**—Leriche states that this burning type of neuralgic pain has certain features which suggest that it is the result of irritation at some point of the sympathetic innervation of the limb involved. The war has rendered this causalgia comparatively common,

and has confirmed the assumption that it is a neuritis of some part of the sympathetic system. The most convincing argument in favor of this assumption is the success of therapeutic measures based thereon, aiming to modify the peripheral sympathetic. Leriche acted on the sympathetic by stripping the peripheral arteries, supplementing this denudation by severing the perivascular nerves and, when possible, removing the entire sheath of the vessel over a certain extent. In one case of agonizing causalgia from a gunshot wound, he denuded the humeral artery and excised its sheath for a stretch of 12 cm. Improvement followed at once. The pains were materially reduced, the vasomotor phenomena subsided and the relief has been permanent during the six months to date. In a second case there was complete lax paralysis of the left arm after a gunshot wound with fracture of the clavicle. The arm was constantly cold and various trophic disturbances developed, with paroxysms of burning pain in the hand. The causalgia by the sixth month was most distressing, and Leriche then exposed the humeral artery. There was no pulse or blood in it, and it was reduced to a cord scarcely 2 or 3 mm. in diameter. The neighboring nerves were soft. He removed the arterial sheath for quite a distance; there was no hemorrhage. The next day there was formication in the hand and it felt warmer. The trophic blisters and other disturbances retrogressed, and in a fortnight the man could move his arm a little. The pains had been materially mitigated from the first. The resection of the arterial sheath modifies the perverted sympathetic innervation by acting on the peri-arterial nerve plexuses involved. The mechanism and effect are similar to those of section of the cervical sympathetic in treatment of trigeminal neuralgia: suppression of certain diseased elements of the sympathetic innervation restores freedom of action to the other vasomotor ramifications. In both his cases the clammy, livid hand grew warm and normally pink, showing that the upset vasomotor balance had been restored.

For the leg, he would attack the sciatic or femoral artery, as these nourish the sciatic nerve from the rear and front. He has had no occasion to operate on the legs, but is convinced that this simple method of acting on the peri-arterial sympathetic innervation will relieve in many cases of sympathetic neuritis causing painful vasomotor troubles, especially after wounds of the hand and forearm in which the trunk nerves themselves are free from all injury. Possibly the procedure may benefit also in certain cases of reflex contracture and paralysis suggesting a vasomotor element. In short, he concludes, it is a new field to explore, and a promising one.

Progrès Médical, Paris

March 20, XXXII, No. 6, pp. 41-48

72 Diagnosis and Treatment of Gas Gangrene. A. Chalier.
73 *Stricture of the Rectum. (Rétrécissement du rectum.) Potherat.
74 *Pathogenesis of Tuberculous Rheumatism. (Pathogénie du rheumatisme tuberculeux.) Rathery.

April 5, No. 7, pp. 49-56

75 The Sputum With Old Wounds of the Chest. (L'examen histochimique des crachats dans les vieilles blessures du thorax.) M. Loeper, G. Verpy and L. Cosnier.
76 *Typhoid Orchitis and Epididymitis. (Orchi-épididymite typhoïdique.) D. Olmer and R. Voisin.
77 Simple Calculation to Locate Projectile in Tissues. (Radiologie sur une méthode de zéro fournissant immédiatement en vraie grandeur la profondeur du projectile à localiser.) G. Andrault.

73. **Cancer of the Rectum.**—In a typical case described the robust and vigorous man of 51 complained merely of "internal hemorrhoids," saying they had been troubling him for two years. His former physicians had treated him for constipation and congestion, but none had palpated the interior of the rectum. Potherat placed the man on his side, the thigh and leg completely extended while the upper thigh and leg were flexed. He then anointed the region and his rubber glove, and his finger found at once a large ulceration in the rectal mucosa, adherent to the prostate. He discusses the advisable technic in such cases and says that with a palliative artificial anus at the sigmoid flexure or descending colon one such patient survived in good condition for four years, another for thirteen months, taking walks of 16 kilometers a day. Potherat deplores that so few physicians make a routine practice of digital examination of the rectum, and thus cancerous growths reach an inoperable stage before they are suspected.

74. **Tuberculous Rheumatism.**—Rathery describes two cases of chronic rheumatism to illustrate one form and suggest its explanation. One woman of 32 at 18 had rheumatic trouble in the right hand for two months, and two years later in the right knee, and no further disturbance for twelve years. Then chronic bronchitis developed, with rheumatic pains in her fingers, and the joints swelled, with stiffness of the wrist and, finally, hydrarthrosis of the right knee. Radiography confirmed the deformity of the joints, but the process is not so extreme as with other forms of rheumatism. There are also signs of an apical process. A second case, in a man of 38, is practically identical. Rathery's explanation of such cases is that the early rheumatic phenomena were due to an arthritic soil. With this, chronic rheumatism develops on the occasion of any ordinary or specific infection or intoxication. In these cases tuberculosis was responsible.

76. **Typhoid Orchitis.**—The orchitis and epididymitis developed during convalescence from typhoid and left limited induration. The course was about six days. Others have reported three cases in the recent epidemic of typhoid. The affection was unilateral in all; but the cord was involved in three of the cases and the vaginalis in two. There was suppuration in two cases and a relapse in another case. None of the patients had gonorrhea. Typhoid bacilli were cultivated from the process in two cases; the colon bacillus in one, and the paratyphoid B in one. This typhoid complication resembles the orchitis of mumps by its rapid course, and the orchitis of gonorrhea by the involvement of the cord and epididymis, while the tendency to suppuration is peculiar to it.

Correspondenz-Blatt für Schweizer Aerzte, Basel

April 15, XLVI, No. 16, pp. 481-512

78 *Miliary Tuberculosis With Chronic Benign Course. (Ueber Miliartuberkulose.) L. von Muralt.
79 *Iodin in Treatment of Goiter. (Zur Joddarreichung bei Kropf.) Grumme.

78. **Benign Miliary Tuberculosis.**—Muralt describes a case which shows the possibility of miliary tuberculosis developing in a mild chronic form with ultimate recovery. The patient was a physician of 35 with an inherited neuropathic and tuberculous taint, but healthy, except for "children's diseases" and pleurisy at 22, until the age of 31 when, after several months of overwork as physician at a tuberculosis dispensary, with inadequate food, pleurisy with effusion developed insidiously and kept up for fifteen months without impairing the general health particularly. Then miliary tuberculosis developed with a stormy onset but soon subsided to such a mild course that the contrast between the Roentgen findings and the good general health was striking. The Roentgen picture was highly characteristic within three weeks of the first miliary onset. After two years of this, two tuberculous tumors in the scrotum required excision in turn and later tumors of the same kind developed in the spinal cord and medulla, one finally proving fatal after two had been removed. Miliary tuberculosis seems to be accompanied by tumors in the central nervous system comparatively often. Muralt has encountered a second case which demonstrates this anew. A young woman with acute miliary tuberculosis and night sweats presented symptoms of a tumor in the brain. On account of the septic condition no attempt at operation was ventured and death followed in less than a year from the first symptoms of the miliary tuberculosis. In the first case there were no night sweats at any time, and after the initial phenomena the disease subsided into an entirely latent course and death occurred eight months later, from the tumors, with no further signs from the miliary disease.

79. **Iodin Treatment of Goiter.**—Grumme insists that endemic goiter is due to a lack of iodin in the food, and hence that administration of iodin benefits endemic goiter. He regards it as probable that if Switzerland would promote

the importation of sea fish, so that they would be plentiful and cheap, goiter would become less prevalent. More than two thousand years ago the Greeks recommended sponge charcoal (*Schwammkohle*) for goiter, which was an iodin treatment, and experience has confirmed the value of iodin in prevention and cure of endemic goiter. Regions where goiter is endemic are usually free from the exophthalmic form, in which iodin does harm. Even the eating of sea fish aggravates Basedow's disease, as Grumme has confirmed in his own practice. It is important, therefore, to exclude any tendency to the Basedow type before permitting iodin. A tranquil temperament, a phlegmatic disposition, usually exclude exophthalmic goiter. The endemic mountain-goiter is generally inclined to be hard and sometimes knobby, while the Basedow goiter is soft. He warns in conclusion that the administration of iodin requires great care not only for those with goiter but in general practice as there may be a latent predisposition to Basedow's disease which iodin may fan into a flame. Oswald regards this danger as so serious that he advises against iodin for any form of goiter.

Gazzetta degli Ospedali e delle Cliniche, Milan

April 20, XXXVII, No. 32, pp. 497-512

80 Tracheotomy and Intubation in Laryngeal Diphtheria. (La tracheotomia e l'intubazione nelle stenosi laringee difteriche.) A. Franchini.

Policlinico, Rome

April 23, XXIII, No. 17, pp. 517-548

81 Case of Acute Myeloid Leukemia in Woman of Fifty-One With Necropsy. C. Romagnolo.

82 Wounds of the Knee in War. (Sull'indicazione operatoria nei casi di proiettili nell'articolazione del ginocchio e sulla tecnica adottata per praticarne l'estrazione.) M. Fasano.

83 Encouraging Results With Sodium Citrate in Treatment of Pellagra. (La cura della pellagra con le iniezioni di citrato trisodico.) A. Secchieri.

April, Surgical Section No. 4, pp. 97-128

84 Functioning of the Great Omentum With Strangulated Hernia. (La funzione del grande epiploon negli strozzamenti erniari dell'intestino. Ricerche e considerazioni cliniche e terapiche sopra 52 interventi per ernia strozzata.) I. Scalone. Commenced in No. 3.

85 *Comparison of Various Technics for Autoplastic Operations; Advantages of the Italian Method. (Il metodo italiano di autoplastica nelle estese asportazioni muscolo-cutanee.) O. Cignozzi.

86 Ligation of Coronary Arteries and Veins. L. Dominici. To be continued.

85. **Extensive Pedunculated Flaps for Autoplastic Operations.**—Cignozzi extols the advantages of the Italian method for autoplastics, describing an illustrative case. In an industrial accident the skin and muscle had been torn from the elbow and adjacent regions over an expanse 15 by 25 cm. in size. This was covered with a flap cut in the side of the chest and abdomen, the upper end not cut across, the arm fastened immovably to prevent any traction on the flap. In one week the flap was cut partly across, and the twelfth day was completely severed. By the twenty-fifth day the flap had grown entirely in place and by the fiftieth day healing was complete, the functioning of the elbow normal.

Riforma Medica, Naples

March 13, XXXII, No. 11, pp. 281-308

87 *Diabetes of Nervous Origin. (Del diabete neurogeno.) T. Silvestri.

March 20, No. 12, pp. 309-336

88 Agglutination After Vaccination Against Typhoid. (La reazione di Widal nei vaccinati contro il tifo.) L. Datta; (Idem.) A. Ceconi.

89 Studies on the Eosinophils and Basophil Leukocytes. G. Gross. To be continued.

87. **Diabetes of Nervous Origin.**—Silvestri reports the clinical course and necropsy findings in a case of diabetes in which there were no pathologic anatomic findings capable of explaining the diabetes. He assumes that it was of nervous origin, as the neurasthenic man of 53 had a family history of much nervous and mental disease. The literature on the subject of diabetes developing after disastrous speculation or other nervous shock is reviewed, and authors cited for and against the assumption that diabetes can be brought on by nervous factors alone. Silvestri's four other cases also apparently confirm this beyond question. One patient was a neurasthenic man with inherited psychopathic taint whose urine was found to contain sugar after a period of much worry. The urine after a medical examination always contained sugar. In the course of a few years the neurasthenia subsided, and the urine became normal. At present there is no further trace of the neurogenous "diabetes" of eight years before, although no attempt at dietetic treatment had been made. Another patient was a woman with a family history of diabetes. After an attack of pneumonia she had mild glycosuria which yielded promptly to restriction of carbohydrates until her son developed typical diabetes which ran its course to a fatal ending in three years. After this the mother's glycosuria became permanent, unmodified by dietetic measures. In the two other cases the glycosuria came on directly after a severe grief or fright. These experiences testify that diabetes may occur for the first time or be roused or aggravated by nervous shocks, and Silvestri explains the probable mechanism by which this is brought about. He has been unable to trace it to any one gland or other organ, but the influence of a hereditary taint is obvious.

Semana Medica, Buenos Aires

XXIII, No. 3, pp. 59-86

90 Osteoplastic Operations After Amputation of the Leg. (Operaciones osteoplasticas diafisiarias de la pierna.) O. Copello.

91 Treatment of Reflex Enuresis. F. A. Deluca.

92 Local Anesthesia in Extraction of Teeth. (Oportunidad de la extraccion.) O. F. Ferreira.

No. 4, pp. 87-114

93 Serotherapy in Pneumococcus Diseases. (Sobre terapeutica esencial de diversas neumococcis por el Haptinogeno Neumo Mendez.) N. S. Loizaga.

94 Antagonistic Action of Strychnin and Antitetanus Serum. (Investigaciones comparadas acerca del antagonismo de la accion contra la estricnina de los varios sueros antitetanicos.) G. Tizzoni and P. Perrucci.

Prakticheskiy Vrach, Petrograd

XV, No. 9, pp. 81-88

95 Heart on the Right Side. (K klinikie dextrocardia i dextroversio cordis.) E. J. Stolkind. Commenced in No. 8.

Russkiy Vrach, Petrograd

1915, XIV, No. 47, pp. 1105-1128

96 Effect of Asphyxiating Gases on the Nervous System. (K voprosu o vliyanii primienyamikh germantsami udushlivikh gazov na nervnuio systemi.) M. P. Nikitin.

97 Gas Gangrene. (O gazovom omertvienii u ranenikh.) V. P. Miroliuboff.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

March 25, I, No. 13, pp. 1057-1144

98 Differential Diagnosis of Smallpox. (Over de pokken te Amsterdam in 1903 en 1904.) A. Snoek.

99 *The Interval Leukocyte Picture in Epilepsy. (Het "witte bloedbeeld" bij lijders aan epilepsie.) A. Schoondermark.

100 Congenital Bilateral Microphthalmus With Cysts in Lower Lids and Left Harelip. H. Weve.

99. **Lymphocytosis in Epileptics.**—Schoondermark found in examining the blood picture of epileptics at the state hospital for epilepsy, that the number of leukocytes was constantly high. The increase was in the lymphocytes, which were both relatively and absolutely more numerous than in normal conditions. She gives the details from thirty-one cases examined during intervals between seizures. No characteristic differences between the blood pictures of the organic and the "genuine" types could be discovered.

Hospitalstidende, Copenhagen

April 5, LIX, No. 14, pp. 305-328

101 Improved Technic for Cultivation of Cholera Germs. (En Maade til Fremstilling af øjeblikkelig brugbart Dieudonné-Næringssubstrat til elektiv Dyrkning af Choleravibrioner.) H. C. Hall.

Hygiea, Stockholm

April, LXXVIII, No. 7, pp. 417-480

102 *Atrophy of the Small Muscles of the Hands in Consequence of Compression of the Spinal Cord in the Neck. (Om atrofier i handens småmuskler vid kompression av översta cervikalmärgen.) G. Söderbergh and C. Sundberg.

102. **Atrophy of the Hand Muscles from Compression of the Spinal Cord.**—The compression was from an extramedullary tumor in the neck in both of the two cases described. One has already been listed in these columns as a successful operative case (1912, LIX, p. 1414). The other patient was a man of 59 and the necropsy findings are discussed. The atrophy was so pronounced in both that a casual coincidence seems to be out of the question. Atrophy of the small muscles of the hands, especially of the thenar eminence and of the first interossei muscle, may thus aid in the diagnosis of compression of the upper segments of the spinal cord on that side. The tumor extended from below the arch of the second vertebra to above the atlas in one case, and from the second to the fourth segment of the cervical spinal cord in the other.

Ugeskrift for Læger, Copenhagen

March 30, LXXVIII, No. 13, pp. 459-492

103 Otogenous Subperiosteal Abscesses in Temporal Region; Thirty-One Cases. (Den otogene subperiostale Absces i Regio temporalis.) R. Lund.

April 6, No. 14, pp. 493-540

104 Technic for Gram Staining. G. Jørgensen.

105 *Rapid Technic for Determination of Albumin in the Urine. (En hurtig Metode til kvantitativ Bestemmelse af Aeggehvide i Urin.) K. L. Gad-Andresen.

April 13, No. 15, pp. 541-584

106 *The Residual Nitrogen in the Blood as Index of Kidney Efficiency. (Den kliniske Undersøgelse af Nyrefunktionen særlig ved Bestemmelse af Rest-Kvælstoffet.) V. Scheel. Commenced in No. 14.

107 Venereal Diseases at Copenhagen. (Kønssygdommene i København for og efter 1906.) S. Lomholt.

105. **Simple Test for Albumin in the Urine.**—Andresen has been giving E. Lenk's method a thorough trial. (It was described in these columns Jan. 1, 1916, p. 66.) He found it even more dependable than other technics if temperature, interval, etc., are uniform.

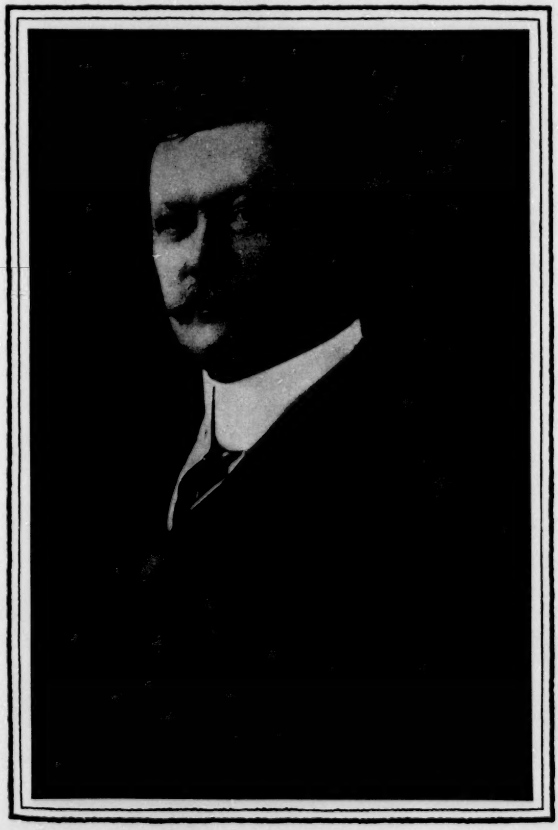
106. **Residual Nitrogen in the Blood as Index of Kidney Efficiency.**—Scheel's extensive research on the retention of "rest nitrogen" in the blood as an index of renal function has convinced him that determination of the residual nitrogen is as necessary a routine measure and even more important than to examine the urine for albumin. It differentiates nephritis from various conditions with hypertrophy of the heart and high blood pressure, which are so frequently mistaken for nephritis. It serves further as a guide to treatment, and throws light on the prognosis. It is important particularly because it shows to which of our patients with nephritis we can permit protein feeding freely and which must have their protein cut down. In his discussion of the various other tests of kidney function, he remarks that tests with substances alien to the body are never entirely satisfactory. Also that the functioning of an organ fluctuates at times, and a single test is of little value. Retention in the blood of substances normally eliminated in the urine, on the other hand, gives direct insight into the eliminating and excreting power of the kidneys, and Bang's micromethod for nitrogen determination has made it possible to detect every degree of retention of nitrogen in the blood serum. The details of a number of cases of nephritis are tabulated to illustrate the value of the findings in nephritis with and without uremia, compared with the rest nitrogen findings in 57 patients free from nephritis. In the 12 cases of uremia, the residual nitrogen was in abnormal amounts, over 100 up to 289, in 11 of the cases, but it ranged only from 27 to 45 in one man of 38. He had hydremia, the albumin content being less than half the normal figure. The case shows the necessity for estimating the proportion of water in the serum, as the dilution affects the proportion of nitrogen. The uremia in this case was mild and soon subsided.

When sodium chlorid is retained, it passes into the tissues and edema fluids; the proportion of sodium chlorid in transudates is often higher than in the blood. But this does not occur with retained nitrogen; if the proportion of residual nitrogen in the blood is approximately normal, and there is no edema, the conclusion is justified that the kidney functioning is adequate for the needs of the moment. Even with edema, the same conclusion is justified as the retention of fluids may be the result of causes other than insufficient kidney functioning. In the 66 cases of nephritis without uremia, the residual nitrogen figure was normal in a number—that is, below 40 mg. in 100 c.c. blood—but these were all cases of hydremia masking the retention, or else the nephritis was extremely mild. In dubious cases, a test meal of considerable protein, comparing the figure for the residual nitrogen before, a few hours afterward and the next morning, will show at once the functional capacity of the kidneys. There is no increase in the residual nitrogen in the healthy after a meal of 85 gm. protein, but in one man of 26 with nephritis the figure more than doubled in about twelve hours; in another case, apparently as severe, the figure remained unchanged and recovery was soon complete. This test proved particularly useful in distinguishing between albuminuria of the benign, orthostatic type and that due to actual nephritis.

The fourth table gives the details of 57 patients with various affections but apparently sound kidneys. The residual nitrogen was within normal range in all but a few. The exceptions were one of the four infants, some patients with liver disease (the bile in the blood possibly explaining the increased nitrogen figure); and two patients without symptoms of nephritis, but necropsy revealed far advanced disease of the glomerular apparatus. The more active metabolism in infants may render normal a high nitrogen content in the blood. The further course of all the cases cited confirmed the reliability of the residual nitrogen findings as an index of kidney efficiency, especially of the functioning of the glomerular apparatus. Even when the clinical picture includes albuminuria, tube casts and edema, if the residual nitrogen keeps within or close to normal range, we can conclude that the glomerular apparatus is intact and that the storm will blow over in time. Some striking instances are related in which the prognosis was based on the persistingly normal residual nitrogen content of the blood serum, and reexamination some months later showed the urine and blood findings practically normal, no edema, and the blood pressure only slightly above normal.

Scheel warns that the residual nitrogen content should be determined more than once as the figure may fluctuate with the amount of protein in the diet, and it may rise and fall abruptly with acute nephritis or acute exacerbations of chronic glomerular nephritis. In chronic nephritis a rise in the residual nitrogen figure may be the only sign to warn of impending uremia. In treatment, he recalls that Bang found that well fed rabbits bore without much harm induced nephritis to which the underfed invariably succumbed. Good nourishment is indispensable in treatment of nephritis, and we must ascertain what the patient can tolerate and not impose unnecessary restrictions. Retention of salt is easily determined from the urine salt content. The amount of protein to be allowed in the diet can be estimated from the behavior of the residual nitrogen in the serum. He suggests that it is a simple matter to send a specimen of serum to a laboratory for examination.

The residual nitrogen in itself does not seem to be responsible for any special symptoms, but serves merely as an index of the toxemia and its degree. It may sound the warning before the toxemia has begun to induce symptoms. The 155 cases on which Scheel's conclusions are based are particularly instructive as many of them were under prolonged observation, the ultimate course confirming the conclusions drawn on the basis of the proportion of the residual nitrogen retained in the blood. He says that he has been working for nearly two years with Bang's new method although Bang did not publish it until December, 1915 (*Biochemische Zeitschrift, lxxii*). It is on the same principle as his micromethod for determination of the sugar in the blood. The blood or serum is dropped on paper and a precipitating fluid is applied to the paper. This precipitates the precipitable elements in the blood while the nonprecipitable diffuse into the fluid. Bang at first used mercuric chlorid for the precipitating fluid but found that phosphomolybdic acid precipitates the albumin more perfectly. His formula for the solution is 0.5 per cent. phosphomolybdic acid; 1.5 per cent. sulphuric acid, and 0.5 per cent. sodium sulphate.



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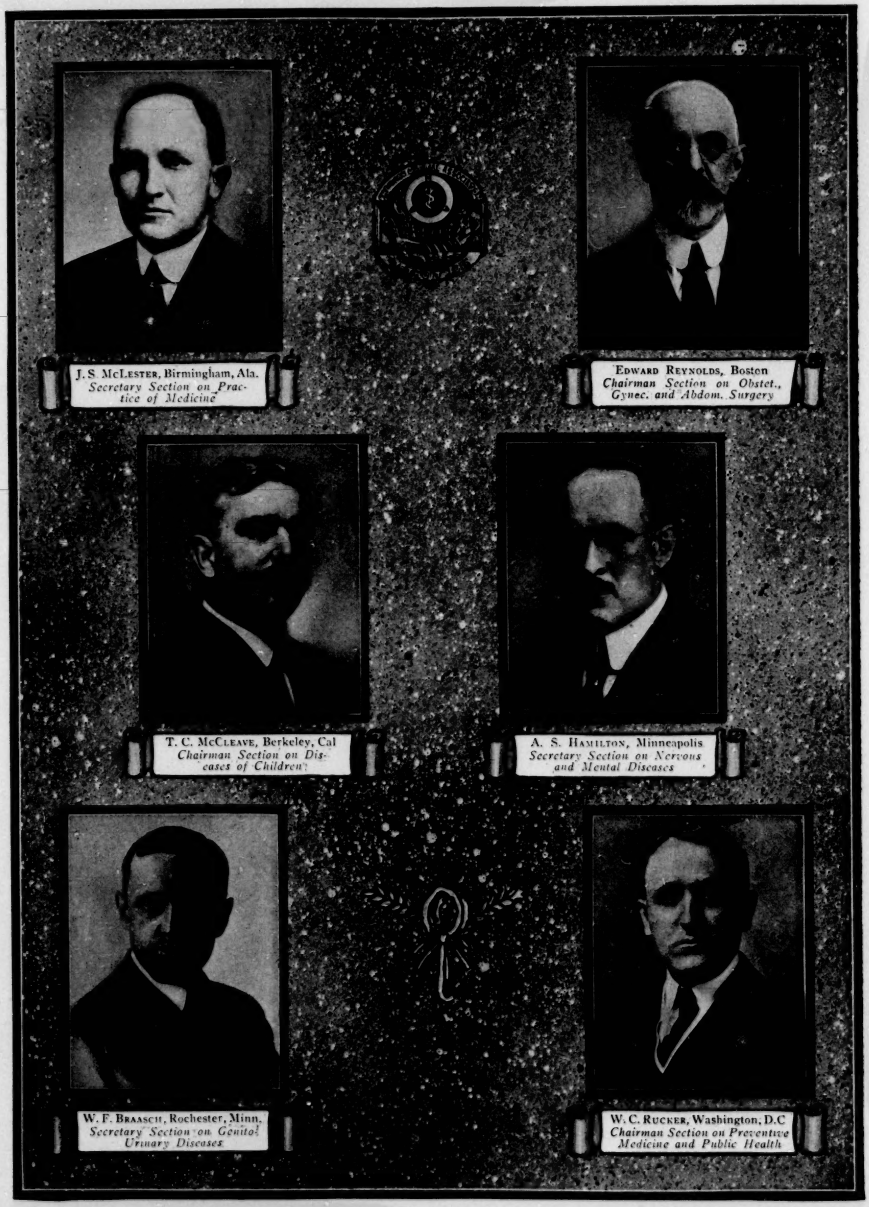
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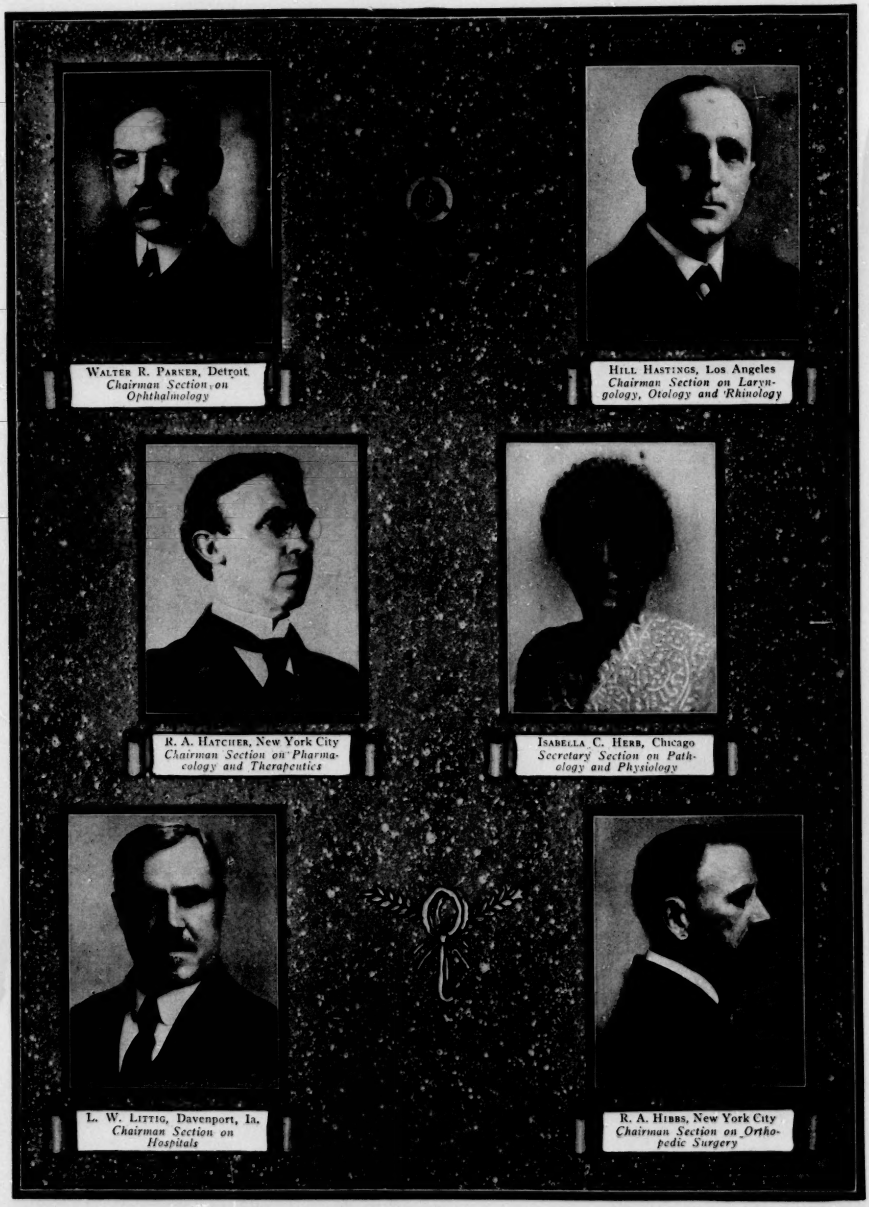
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